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FLATHEAD RIVER BASIN ENVIRONMENTAL IMPACT STUDY

HEARING

BEFORE THE

SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

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FLATHEAD RIVER BASIN ENVIRONMENTAL IMPACT STUDY

WEDNESDAY, JULY 6, 1983

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON TOXIC SUBSTANCES
AND ENVIRONMENTAL OVERSIGHT,
Kalispell, Mont.

The committee met at 9:30 a.m. in the city council chambers, Kalispell, Mont., Hon. Dave Durenberger (chairman of the subcommittee) presiding.

Present: Senators Durenberger and Baucus.

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator DURENBERGER. The hearing will come to order. Today's hearing is being held by the Senate Subcommittee on Toxic Substances and Environmental Oversight which I am privileged to chair. My colleague, Senator Max Baucus, is the senior Democrat on the subcommittee and it was he who urged us to conduct this hearing. I considered myself fortunate, first, to be in the majority in the U.S. Senate which hasn't happened to Republicans for a long time, but second, to be the chairman of the two subcommittees which have brought me to Montana because Max Baucus is the ranking Democrat on those two committees, the other one being the Health Subcommittee of the Senate Finance Committee, I also appreciate Max's nonpartisan approach to everything except elections and I guess that's wise to be partisan at election time.

But in addition to hearing from witnesses today, he and I will over fly the Flathead River basin later today and land at the Moose Lake airstrip for a discussion of the issues which surround the proposal to strip mine Canadian coal reserves just over the border.

Although my home State of Minnesota is but one State removed from Montana, I am a newcomer to this controversy. It strikes me that this issue is, however, of much more than only local importance. At the heart of this matter are issues of importance to both the United States and the North American Continent.

For that reason, new though I may be to the problem, I have visited personally with Canadian Environmental Minister John Roberts and the Canadian Ambassador to the United States, Alan Gotlieb, to inform them that I would be chairing this hearing today. And while I understand that Canada operates a little differently from the United

States in terms of the relationship between the National Government and Provincial Government, I thought it was important to let those people know of my personal concerns with this particular job.

I held both meetings before I voted against the Garrison diversion project in our mutual neighbor, North Dakota. It, like the subject of today's hearing, raises significant Canadian and American concerns. Ultimately the proposed strip mine will force Canada and the United States to confront two tough questions: First, do you possess the political will to demand that energy resources be developed in an environmentally acceptable way; and second, can the United States and Canada each rise above parochial concerns long enough to cooperate with each other in protecting the health and environment of both countries and the people of those countries.

The answer to these questions will be of importance far beyond the borders of the Flathead River basin. They will determine the quality of life not just for those of you who will live here, but for tens of millions of other Canadians and Americans whose interests are at stake in the other Canadian-American problems.

That is because the issues raised here are fundamentally the same as those raised by these other Canadian-American disputes, ranging from the Garrison diversion project to the acid rain debate, a debate in which I am also deeply involved.

If there is division on this matter and the others, it is not between Americans in one camp and Canadians in another, rather, division is more likely between those who favor strict environmental control and those who do not. On that subject, Americans will disagree with Americans and Canadians will disagree with Canadians.

Disagreement, if any, is unfortunate because it is unnecessary. Viewed in the long term, environmental controls add only a small cost and in some cases, no additional cost at all to energy production. Those new costs which are added, however, are short-term costs, lasting at most for a generation while the resources which these extra costs protect will endure perhaps beyond humanity itself.

My grandfather came to western Montana to lay rail for the Great Northern Railway at age 15 in the year 1900, 10 years before Glacier became a national park. The simple fact is that when my grandchildren reach the age of my children today, many of these energy reserves will have been exhausted, but the Flathead River and the Glacier Wilderness will still be here, if we protect them now.

The same is true of the boundary waters area of my State which is threatened by acid rain. The acid rain is caused by pollution in both Canada and the United States which could easily be reduced greatly if we two nations were of one mind to accomplish the task. But there are those on both sides of the border who resist those controls on the grounds that they cost too much.

If costs are measured in a lifetime's increase of 3 or 4 percent in electricity rates, then the price of environmental protection may seem high. But if they are measured by an eon of damage avoided, the costs of environmental protection suddenly seem very modest. Perhaps even, as the saying goes, cheap at twice the price.

As I said, I am a newcomer to the debate here in Montana, but I am no stranger to the debate raging in the East and Midwest over acid

rain control. I have the sense that there may be striking and fundamental similarities between these two controversies. That suspicion, combined with my great respect for Senator Baucus, accounts for my presence today and I am looking forward to hearing from each of you and hope that we will all benefit from the information you provide. Max.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you, Dave. First, I want to welcome Senator Durenberger to Montana. As Dave said, he is the chairman of the Toxic Substances and Environmental Oversight Subcommittee of the Committee on Environment and Public Works. I know that's a long title but essentially that is the name of the full committee which has jurisdiction over environmental issues which are so important to us in Montana. And it is in that posture as chairman and ranking member of that subcommittee, that we are here today to evaluate the final act of the long drama that is the Flathead River basin study. It is our intent to analyze the study, develop a good solid record so that we can utilize the process not only perhaps here in Montana again but in other parts of the country.

I might tell you, Dave, that the genesis of the study came about several years ago when we in Montana and particularly in the Flathead basin there was considerable concern about the proposed Cabin Creek-Howell Creek development. We realized if we're going to be able to have sufficient input in Canada and have leverage with the Canadians, that we had to have solid base line data. That in large part is what the study was about. I have worked with the Environmental Protection Agency and various committees of the Congress to insure the completion of this study. I can remember every year having to pull teeth with EPA to get requisite appropriations on an annual basis in order to complete it. I'm glad that we have successfully completed this study. As you know, the Flathead River basin study issued its report. We have seen that report. I think it's going to set an excellent precedent for studies in the future.

Unfortunately, this may not be the final act with respect to Cabin Creek. As you know, Cabin Creek is now awaiting decision regarding its stage II application. We don't know whether the British Columbia Government is going to grant the stage II permit to the company.

I was in Vancouver, B.C., just a couple of weeks ago. I met with the ministers and again raised the profile of our concern in Montana about the Cabin Creek development. They gave me no indication whether or not they would grant the stage II permit. It's important for us here today to show the Canadians and in particular the Government in British Columbia, that we are as concerned today as we have been in the past about this pending application.

I think a good part of the hearing today will focus on ways in which the study will help not only the potential Cabin Creek development but also other decisions that will be made or not made in the Flathead Valley. It includes Forest Service decisions, private enterprise decisions, and Glacier Park decisions, essentially all matters that affect this very sensitive and very special part of Montana.

I would like to thank the mayor and also Marge Girman for their very gracious hospitality. Everything is set up, everything is working well and I know it will continue to work well. And I want to thank Mayor McDowell and also Marge publicly for their great work here.

Senator DURENBERGER. I would just make one other observation. I made reference to my grandfather coming out here and laying rail when he was 15 and that reminds me that, you strike up friendships in lots of ways and I had a particular pleasure as I walked in the door here to see someone that I hadn't seen in a long, long time who came from Montana to Minnesota to get educated and happened to pick the institution from which my father had recently graduated and was the athletic director. I find out he is a politician—I don't know if you even use those words out here—but Matt Himsl, who is a State senator from this area is an old and close and very dear friend of my parents in Minnesota and it was a particular delight to see Matt here today also.

We will begin with a panel of three. First is the Flathead River Basin Study Steering Committee, the chairman of which is Mr. Thurman Trosper. He will be accompanied by Mr. Bob Allen and Mr. Dave Klehm. All three of those gentlemen are here. I welcome you all.

I would say to Mr. Trosper, I had the privilege of reading your testimony before the House committee recently on the way up here. I was delighted by, not only the insight it gave into the problem, but also the insight it gave me into you personally and that is sometimes very helpful also.

Mr. TROSPER. Thank you. We would lead off with Mr. Klehm to give you a little background of how the study was organized and put together and it's a little bit unique because we usually don't operate this way. We usually turn it over to a bureaucracy who controls it and then the study either falls apart or it doesn't get used because you don't have the broad base of involvement. This is kind of a unique approach.

Senator BAUCUS. Before we begin, I might encourage everyone to speak up. There is no microphone at the table and the people at the back of the room want to hear as well as the front of the room. I encourage you all to speak up loudly so we can all hear.

STATEMENT OF DAVE KLEHM, INDUSTRY REPRESENTATIVE, STEERING COMMITTEE, FLATHEAD RIVER BASIN ENVIRONMENTAL IMPACT STUDY

Mr. KLEHM. Mr. Chairman, my name is Dave Klehm. I am a professional forester responsible for managing 190,000 acres of the 274,000 acres of land within the Flathead River basin, owned by BN Timberlands, Inc. For the past 5 years, I have served as the industry representative on the steering committee for the Flathead River basin environmental impact study.

BN Timberlands, Inc. has strongly supported the need for this study. It is our belief that the study has been extremely successful in accomplishing the goals that it set. Too often impact studies are undertaken to meet a need, narrowly defined from afar. These types of studies may be useful in answering a few very specific questions, but beyond that objective, they merely end up as documents on a shelf, collecting dust. It is rare that they are incorporated into on-going or

future resource management. I do not believe that the Flathead study will succumb to this fate. It has already proven itself useful as a tool to review the effect of the proposed Cabin Creek Coal Mine. It has increased public awareness toward the need for advance waste treatment facilities to protect the quality of Flathed Lake. In the future, it will provide a means to quantify how well we are managing the environmental resources of the basin.

Two factors regarding the structuring of the study have significantly affected the overall success that the study has enjoyed. Although I could talk about other aspects of the study, I would like to focus on those two aspects.

The establishment of the local steering committee with direct control and responsibility for the study has been the single most important factor in insuring the completion of a study responsive to local needs. The steering committee recognizes the complexity of managing an international drainage which comprises a broad range of resource management responsibilities and agencies. They therefore emphasized an ecosystem approach with a foundation in baseline data collection. Baseline data collection, in turn, was structured to identify processes in such a manner as to dovetail with existing resource management.

By turning the study over to the local steering committee, the U.S. Environmental Protection Agency showed tremendous faith in the ability of local people to make the kind of decisions necessary to insure that study objectives were accomplished. They are to be commended for this action. Without a steering committee, the same high quality results could have been obtained, but it is unlikely that the incorporation of these results into resource management decisions would have occurred as rapidly as they have, if at all. It was the direct efforts of the steering committee bringing the study to the attention of British Columbia that has provided for the incorporation of our data into their review of the Cabin Creek Coal Mine.

Since I have indicated that I feel very strongly that the success of the study has relied very heavily upon the steering committee, I would like to briefly review the makeup of this committee. The committee was comprised of representatives from a diverse array of interests. Groups represented on the steering committee included: Industry, conservation groups, private citizens, the Confederated Salish and Kootenai Tribe, local elected officials, the Forest Service, the Park Service, the Environmental Protection Agency, and the Governor. So long as EPA regulations were adhered to, the steering committee was given complete latitude defining study objectives, setting priorities and allocating funds. All decisions of the steering committee were made by majority vote with the Environmental Protection Agency being just like any other member with a single vote. Over the past 5 years, the steering committee has met monthly. To demonstrate the commitment of this group, a quorum was absent at only one meeting during this time. This meeting occurred during a spring snowstorm.

A strong commitment on the part of the steering committee has been an important factor which has helped to insure that the study did fulfill local needs. Through discussions conducted at the first meetings, it became apparent that each individual, governmental entity, or public agency, operated with specific management responsibilities and ob-

jectives. Although each conducted their management activities within a specific jurisdictive area, there was a great potential for these management activities to have effects far beyond these areas. Although each manager, or official, recognized this fact, too often critical data to understand these effects upon the larger region was lacking. In other words, although the need for this concern over resource development within the Canadian portion of the basin and, in particular, the proposed Cabin Creek Coal Mine, made this need apparent. The steering committee provided a forum for this concern to be discussed, increasing awareness of the need to think regionally.

One of the first goals articulated by the steering committee was formulated to address this concern. A primary goal of the steering committee has been to avoid duplications and fill critical data needs not being addressed regionally. Too many studies spend their efforts rehashing existing data without ever addressing critical data gaps and ecological processes. We end up with a pile of reports, each based upon a very limited data base. These types of study provide a false security that resource management decisions are being made upon a solid increasing foundation of data.

By looking at the basin as a system, the Flathead study has compiled an impressive accumulation of data and an understanding of natural processes controlling the quality of the environment which exists here. Emphasizing air and water resources, tools have been developed which will allow us to provide a regional perspective to the individual resource management decisions. The success of the study has already been demonstrated by the role that the study's data has played in the review of the proposed coal mine. The need for continued regional coordination has been clearly established. BN Timberlands, Inc., is committed to this approach and hopes to be directly involved in the Flathead Basin Commission as it assumes the coordination role that has been started through the Flathead River Basin study. Thank you.

Senator DURENBERGER. Thank you very much.

STATEMENT OF ROBERT G. ALLEN, REPRESENTING THE CITY OF KALISPELL, STEERING COMMITTEE, FLATHEAD RIVER BASIN ENVIRONMENTAL IMPACT STUDY

Mr. ALLEN. I would like to welcome Senator Durenberger to Montana, who came in yesterday and had one of our summer days. My name is Bob Allen. I've represented the city of Kalispell on the steering committee since it was started in 1978. Before I get to my own statement, I would like to read a statement from Dr. Elwin Bennington who isn't able to be here today. It is addressed to the Senate Subcommittee on Toxic Substances and Environmental Oversight.

STATEMENT OF DR. ELWIN BENNINGTON, VICE CHAIRMAN, STEERING COMMITTEE, FLATHEAD RIVER BASIN ENVIRONMENTAL IMPACT STUDY

I regret that I cannot attend the hearing personally, however I wish to submit the following in testimony.

Land and water management in the Fathead River Basin should be consistent with the information provided by the Flathead River Basin Environmental Impact Studies. To that end the results of all of the studies are published in both

scientific and basic English versions, and a Flathead River Basin Commission recommended. Although the Basin Studies have provided highly credible scientific information, the dynamics of a living ecosystem require a continuous up-dating of that information. A responsibility of the Commission should be to provide regular annual biologic up-dating or monitoring of the system, and to provide such new information as good system management may require.

It should also be incumbent upon the Commission to act upon new information and to engender harmonious cooperation of the jurisdictional political and resource-use entities resident in the Basin. Cooperation of and among these entities is imperative.

Coordination of effort will require sharing of all available ecologic information, particularly that with predictive value, among land-water managers and with our Canadian friends, one of whom is invited to sit with the Commission.

Inasmuch as a very important segment of the Flathead River ecosystem lies in British Columbia, we must do our utmost to help the Canadians resolve a coal development proposal which is in fact (as shown by our studies) a potential ecologic disaster of the whole system: Cumulative forms of degradation other than coal are important too but they lend themselves more readily to correction and repair. Some future day those Canadian coal mines will be developed and before that happens they should have done their homework on the plans for development, plans that ideally have survived an objective review process and constructive examination that requires adherence to very stringent controls at every step of development, plans that might terminate development at any step beyond which the control system provides inadequate protection of the River System. We hope the Canadians really cherish their beautiful river.

With respect to our information exchange and cooperation with Canada, we acknowledge that elsewhere along our border there are conflicts of ecologic interest (notably the Garrison Diversion Project boondoggle) and that our commitment to friendly exchange and positive action might provide a good example.

The Flathead River Basin Commission, although an institutional mechanism to provide cooperation, action and public awareness, will itself need public awareness and understanding support. The Commission and the public interest will be served well by accepting periodic public evaluation of the role and performance of the Commission. Our objective is to provide good management of public resources for the long-term benefit of governments, business and citizens of the Flathead River Basin.

Effective management of our river basin resources requires not only monitoring of ecologic information but action consistent with that information. It is incumbent upon the Commission to pursue a control action against all degrading influences whatsoever.

Again, I would like to thank the Senators for the opportunity to submit the following testimony. I have some strong personal reasons for being concerned about the impact of the proposed coal mine on Cabin Creek in British Columbia. Any kind of development is bound to affect our environment in some way, but one of this magnitude combined with growth in population, oil and gas exploration and other activities could prove disastrous for the basin.

I was born and raised in northwestern Pennsylvania, have worked in strip mines and in the oil and gas fields, so I have some firsthand knowledge of what can happen to an area with improperly controlled development. I have seen the unpleasant results when a mine or an oil or gas project becomes an economic liability rather than an asset. I have seen an area go from boom to bust in the span of a generation. I believe that having proper controls in place at the time the work is being done could help prevent much of the negative impact from this type of development.

I believe that one of the most important things in the average working person's life is the opportunity to earn a decent living. I believe that in order for this to be possible, we will have to develop our natural resources to the fullest. I also believe that with enough effort and

commitment from all of us that we can find a proper balance between development and a quality environment. For this to happen we will need to have strong regulations in place and a means of enforcing them over a long period of time.

The Flathead River Basin Environmental Impact Study has given us a good solid baseline of information which will enable our scientists and technicians to keep abreast of any changes in the basin environment. The study has also accomplished another important goal, and that is the opening lines of communications between our United States experts and their Canadian counterparts. This has helped to make all concerned parties more aware of what problems each might be facing. The establishment of the Flathead Lake Commission is another positive indication of the commitment of our citizens and elected officials to preserving the basins' quality environment.

The two most critical needs facing us in the near and distant future are to keep the lines of communication open on all levels with our Canadian neighbors and for proper funding for continued monitoring. Without proper funding the work simply will not get done. In order to insure a proper level of funding, the commission and other monitoring agencies will need the support of all our citizens and elected officials. I believe all of us owe this much to future generations. Thank you very much.

STATEMENT OF THURMAN TROSPER, CHAIRMAN, STEERING COMMITTEE, FLATHEAD RIVER BASIN ENVIRONMENTAL IMPACT STUDY

Mr. TROSPER. I guess I'm next along the panel. Senator Durenberger and Max, I am Thurman Trosper, chairman of the Citizens' Steering Committee for the Flathead River Basin environmental impact study. As you know, the Steering Committee has been at work over the last 5 years establishing environmental and economic baseline data for the Flathead Basin. The study has now been completed and the committee has just issued its final report. We'll get that to you if you don't have it. I am pleased to report the goals of the study were met on time and within budget.

The impetus for the study arose from our concern with the possible damage to the North Fork of the Flathead River and Flathead Lake from a proposed open pit coal mine at Cabin Creek in British Columbia. Cabin Creek is a tributary of the North Fork of the Flathead River. The mine site is located about 8 miles north of the border. Cabin Creek is a small tributary emptying into Howell Creek and thence into the North Fork.

The North Fork is one of the few remaining pristine rivers in the lower 48 States. It forms the boundary between Glacier National Park and the Flathead National Forest. It was also recently designated as a scenic river under the Scenic and Wild Rivers Act. Glacier National Park is one of the crown jewels in the park system. In 1933, Glacier National Park and Waterton Park in Canada were designated as an International Peace Park. More recently, Glacier National Park was designated as a unit in the World Biosphere System. Flathead Lake is the largest natural freshwater lake west of the Great Lakes. It too is a crown jewel not only for Montanans but for the whole country.

It is for these reasons that the citizens of the Flathead Basin became alarmed about the effects an open pit mine would have on the river and lake ecosystem. Moreover, our concern has been greatly magnified by the knowledge that the mining and reclamation standards of the British Columbia government are inadequate for controlling onsite impacts both in the immediate future and for the long term.

The Steering Committee has worked closely with the officials from British Columbia over the past 3 years. We have been diligent in supplying them with the baseline data on the North Fork and on Flathead Lake in hopes that they would use this data as a basis for setting adequate standards for the proposed mine. So far there is little indication that they have taken our data on our concerns seriously.

British Columbia has a fairly refined system of review of issuing a mining permit. However, their standards are much lower than those in the United States. For example, they allow discharges into the rivers from their settling ponds to contain 50 milligrams of silt per liter, whereas our standards permit only 10 milligrams per liter. The 50 milligram level is greater than the silt carried by the North Fork during highwater runoff and, further, their discharge would occur on a year-around basis. Their emission standards for air quality have the same shortcomings as for water quality. Because of prolonged air inversion in the Flathead Basin, these emissions will have an adverse effect on Glacier National Park, recently designated as a class I airshed.

The mining plan submitted by Sage Creek Coal to the British Columbia government has spoil dumps that are steep, unstable, and located close to Howell Creek. The spoil banks are proposed to be on a 1-to-1 slope and once they become saturated by the heavy precipitation in the area there is every likelihood of massive landslides into Howell Creek. In effect, what this does is set up a time bomb that we will have to live with indefinitely.

From studying the mining plan and reviewing British Columbia's current standards, and the enforcement of these standards, I have concluded that if the mine were permitted it would have an unacceptable level of environmental impact on air quality, water quality, and, of course, on the fisheries in the ecosystem of the river and Flathead Lake.

In this event, the only recourse we have is to appeal to the International Joint Commission.

The International Joint Commission has at least three insurmountable defects. One, it does not have decisionmaking powers, and can only recommend solutions to each country. Two, the 1909 Boundary Waters Treaty is silent with respect to air quality so the Commission has no mandate to address air quality problems. Three, an appeal to it occurs only after an environmental problem has been identified, which comes after the capital investment has already been made, such as has occurred in the Garrison diversion project. And this will be the case with Cabin Creek. It is difficult, expensive, and oftentimes impossible to correct a major environmental problem after it has occurred; especially after huge amounts of capital have been invested.

With careful planning and adequate standards, most problems can be anticipated and mitigated from the outset provided there is adequate capital investment.

The Cabin Creek mine will require a substantial capital investment to develop. It is situated in an undeveloped area over 60 kilometers from the nearest railhead and over 70 kilometers from the nearest community. At a minimum, the offsite costs will be substantial. It will require 60 kilometers of high standard haul road over a high mountain pass and a powerline over substantially the same distance. Further, this is heavy snow country which will escalate operating cost both at the mine and on the hauling operation. Mineworkers will be transported daily from the nearest community which will further drive up operating costs and reduce labor efficiency.

When the coal reaches the railroad it must then be transported by rail over 500 miles to the coal port at Robert Banks and thence by ship to Pacific Rim and world markets. The several mines in the Elk River Valley, which are all located in the next major drainage north of the North Fork of the Flathead River, are currently operating at less than 60 percent of capacity. If all Elk River mines were operating at full capacity it is doubtful that the Canadian Pacific Railroad has the capacity to move that amount of coal, let alone to transport the coal from Cabin Creek.

As indicated, the Cabin Creek Mine site is deep snow country which translates into heavy runoff. It will require substantial capital investment to trap and contain silt from the massive spoil dumps; not only to contain silt during the life of the mine, but forever. And we are seeing that problem at Anaconda and Butte right now. The people that pick up the tab are the taxpayers.

It seems clear that under present economic conditions the mine would be unprofitable. However, if development proceeds as seems likely the mining company will be forced to cut corners in order to break even or make a small profit. Experience tells us that the first corners to be cut are the environmental safeguards.

Under British Columbia policy of immediate development regardless of cost, the Province could and probably will provide a higher level of subsidy to make the mine profitable. If their goal is to transfer wealth from the west coast to the East Kootenai, then they should consider doing so through the tax system or by direct payment to individuals and communities rather than jeopardizing the integrity of the environment in the North Fork of the Flathead River to accomplish this political goal.

One hopes that British Columbia will develop a rational resource development policy which takes into account sound investment and long term need for nonrenewable energy resources as has been done in the neighboring Alberta Province. The adoption of such a policy would bring order to the irrational and chaotic situation that exists today.

Local governments cannot negotiate with another country, yet it is the local governmental entities that are most directly affected and have the greatest understanding of the issues. This inability to act on the part of the local government causes issues to rise to higher levels of government. Logically, the Cabin Creek issue is one that must be addressed by the State Department. While the State Department has shown some interest in this problem, they have not given

it high priority nor pursued the issue with vigor with Canada's Department of External Affairs.

From our rather limited perspective, we feel our State Department perceives our Cabin Creek problem as a rather minor regional impact of little international import. Yet to us in the Flathead Basin it has the potential to wreak havoc on our environment and our economy. We need your help! How can we energize our tired, old State Department to act with a vigor on our behalf in influencing Canada and British Columbia to establish and enforce high environmental standards in their mining permit for the Cabin Creek Mine?

As mentioned earlier, we now have sound scientific environmental and economic baseline data as a basis for measuring the environmental impact that could arise from the Cabin Creek Mine. Further, we have the capability to translate these impacts into dollars. In a worse case scenario our final fallback position will be to seek monitary remuneration through the International Court for present and future damages suffered. But for those of us who live here, the tradeoff of a pristine environment for a pound of silver is abhorrent. We will all be the poorer in spirit because of it. In short, we will have lost an important ingredient that makes life worthwhile and exciting.

In conclusion, I want to thank you for taking the time from your busy schedule to extend the courtesy of hearing from us at first hand. It is deeply appreciated by all of us. If there are any questions, we would be glad to attempt to answer them.

Senator DURENBERGER. Thank you, very much. I think if we wait for our tired old State Department, we will wait forever. I think we're in the right place with the focus on the environment and obviously the Canadians are at a point now where they're deeply concerned about our lack of interest in acid rain. They have a very sudden interest that arose 2 or 3 years ago and they would have us believe that now they're out in front and they're just waiting for us and that some how or another the President is dragging his feet.

As a general observation I would say that you're moving in the right direction. While the Canadian Government or the State Department is an important place to work, we all work with them on customs, closings, and a lot of problems that are unique to Minnesota. I think that the opportunity for us, perhaps, would be in concentrating on the environmental side of the acid rain issue.

I'm trying to get the objective here into perspective and in Dr. Bennington's statement, which you read to us, Mr. Allen, he says:

> Some future day those Canadian coal mines will be developed and before that happens they should have done their homework on the plans for development, plans that ideally have survived an objective review process and constructive examination that requires adherence to very stringent controls at every step of development, plans that might terminate development at any step beyond which the control system provides inadequate protection of the river system. We hope the Canadians really cherish their beautiful river.

Now short of searching for an end objective that I can get out of this testimony, that particular statement presumes that all of us have some natural resource that is important to humanity that comes out in the form of energy production. The basic question is how we approach the extraction of those resources without doing damage to the

environment. I am getting the impression here from all of your testimony that it is an effort to say that Canada can't mine coal, because obviously Montanans are facilitating the mining of coal to the enrichment of Montanans generally in the Powder River Basin and other places. It is a matter of saying, particularly when you come down south into that Flathead watershed, this particular proposal is not the only proposal that people are going to have to deal with. There are other people interested in extraction of coal in the same area and if you don't do it right the first time, you will have messed up the rest of the process.

So, am I generally correct in interpreting the statements that you have submitted as not an effort on the part of Americans to say we want to save our joint ecosystem and therefore Canadians cannot extract, under appropriate conditions, certain resources that may be important to them or other people of the world, but when you do it, do it right? I read for example the exchange between the Governor of Montana and the Premier of British Columbia and if you don't have a lot of background, as I didn't, when I was reading through that, there seemed to be answers for every question but, occasionally, they say, well that's a new question, we haven't looked at it. For example, their experience with waste dump slopes at 26 degrees repeatedly demonstrated that revegetation of 26 degree slopes was readily obtainable, yet Mr. Trosper's testimony says something different.

Can you briefly and generally summarize some of the things that you feel our friends to the north should learn about environmental safeguards that they haven't learned on the basis of the other kinds of coal mining that they have experienced in British Columbia and what are those safeguards that you feel ought to be put into play.

Mr. TROSPER. The whole history of mankind and using the certain resources, and particularly in this country, has been one of doing it as fast and as cheap as possible to maximize profits in the short run. When we do that, we cast off pollution into the air and the land and into the water. We don't pay the full cost of production at the time. And this, as I see the British Columbia Government, is about at where we were 15 or 20 years ago. They haven't recognized that they should be paying the full cost of production now and not casting off to the future generations. They seem hell-bent on developing all of their resources in the shortest time possible and the front end—the coal mining, they subsidized their timber industry to exploit resources in the very shortest time that is possible. I don't understand that because it sure lacks prudence from the standpoint of the long well being of the province. It makes a great deal of short-term political sense if you want to stay in power politically but in the long term it's a disaster.

Now to answer your question specifically, as I pointed out, they have evidence of a fairly refined process of reviewing and issuing mining permits but what they haven't done is, they have not taken into account the steep spoil banks that they're going to leave. You cannot revegetate land when it's unraveling all the time and when you have land standing on a one-to-one slope in a heavy rainfall area, it continually erodes and there is no way you can stabilize it. They proposed to build drainage ditches, catching ditches along these spoil banks and run this drainage off into the settling pond and settle out the fine silt and it

would discharge into the lake. Well, this has some both short term and long term problems. If you have really steep banks that are eroding all the time and in this country where you're dealing with a lot of water, it's not like eastern Montana where you don't have a water problem—on-site water problem, your banks get saturated and you have massive landslides. The slides come down and block the drainage ditches and the spoil banks are close enough to Howell Creek and this is one of the real prime spawning areas for bull trout. The slides could go right into Howell Creek. This isn't a problem that would happen this year or next year, it might happen 30 years from now after the mine is shut down, everybody has pulled out, the resources are gone and problem is left.

Now the other thing, when they build the settling pond, at one point they are going to make a diversion in Howell Creek because there wasn't enough room to operate in that relatively narrow chamber and they were going to divert it and bring it into the North Fork several miles from where it is now—there is quite an alluvial fan where the North Fork and Howell Creek come together. They finally decided against that. But they were going to move Howell Creek because they have an inadequate place to store the spoil. There is 50 feet of overburden over the coal seams—over the first coal seam. The overburden is laden with bentonite which is a very, very fine silt which irrigators use to line their irrigation ditches. This is the stuff they're going to dump out into the open to the weather and because it's fine, hard to contain, it will be as easily erodable.

Now I'm not saying it isn't feasible to mine under these circumstances. If the markets are right, you get a right price for your coal, you can mine it. There is no problem. The whole thrust of what I was saying in my formal presentation is, now isn't the time because there is a surplus of coal. How long that surplus will last, I don't know, but this mine has all of the disadvantages from an economic standpoint that you could ever hope for. There is coal in Alaska that you could practically bring up to the ship, also of high grade. The eastern coal block being in Canada, the British Columbian Government has invested about $1.2 billion in a railroad, to develop the eastern coal block and I think there is time to do the job right. There are several coal deposits in the North Fork and there are other minerals too. Under the right times and the right economic conditions, that coal can be mined. It's going to be more expensive to mine than the coal in eastern Montana. It's going to be more expensive than a lot of places because of its isolation and the heavy snowfall and cramped quarters you're working in. It's expensive if you want to protect the environment because it's going to cost additional money to do that.

Senator DURENBERGER. For the sake of time, before I turn this over to Max, I need to ask one more question that occurred to me as I was reading your testimony before the House committee which comes back to concerns on our side of the border. In response to a question that was asked you by the chairman of the committee, Mr. Udall, you were talking about the entire ecosystem and you say,

To my mind, they are called different things, they're managed by different Federal bureaus but the management of these areas should really be the same from the standpoint of protecting the resource base. This is one of our difficulties

because of the way we have gone about slicing up the country, we give jurisdiction to this agency, to that agency, we give the county and state responsibility for land use management and they have done a horrible job up to this point.

And then you give them some examples. This is sort of a where-do-we-go-from-here kind of a question and in terms of maintaining baseline date and all that sort of thing, do we have a problem on this side of the border also with the Federal, State, and local levels in terms of a sense of responsibility, resources with which to discharge that responsibility, and appropriate legislative authority so that if you wanted to treat this in one ecosystem, could you get everybody in the same boat rowing in the same direction

Mr. TROSPER. This is the idea of having a steering committee organized the way we have had it organized. All of the land managers and entities were involved in the process. Hopefully they would learn from that process and set up an environment in which cooperation could occur. We are not saying that we need to reorganize the whole Federal Government or State government and change around mandates. I think it's possible, although it has never been done—you understand it has never been done and to my knowledge where we have actually got the Federal and the State and the whole entities all working together in unison to recognize and to avoid and to solve problems that arise, that has never been achieved in our kind of society because we go at things piecemeal. And because we do go at things piecemeal, we have all kinds of problems and problems sneak up on us over time and we have no way to respond and because—there isn't any one entity that has ultimate authority to make decisions to correct something.

So I think that to answer your question more directly, this is why we advocated and went to setting up a commission, because we see this as a long term uphill process of bringing about the kind of cooperation that will actually address the problems and solve problems. Currently the Commission is inadequately funded. I think the Federal Government has a huge stake in this experiment, if you will, in assisting in the funding. We have only $50,000 for the biennium which is inadequate to really do the work. The Commission has no legal power. It's not a political entity as such but it's power will be vested in how well it can educate the citizens and get citizen support, that would be as to how to persuade the agencies to do the right thing. But I would be the first to admit that we are still experimenting to find out ways to make the democratic society function in the interest of all of the society.

Senator DURENBERGER. Thank you. Max.

Senator BAUCUS. Thank you, Mr. Chairman. I might, on that same point Dave made, underline what Thurman just said. I think all of us were a little nervous, to say the least, when this was conceived and originally put together and we have gone through some growing pains. There has been different membership on the steering committee and different situations that affect us at different times but it's an example of—a rare example of where all of the different cities in the State and local government that you mentioned and private enterprise did work together and I think this is basically in part because of the vitality of the Flathead community area. It's a growing part of the State. It's a very special part of the State and people recognize that we had

to get together if they're going to meet the problems that the future is going to present to the valley. So I think it's a rare example and it's a good precedent for other parts of the country as well as here in Montana.

I would like to make another point here. Perhaps you could help me out here, Thurman. You mentioned in your testimony the different environmental standards that we have in Montana compared with British Columbia. I wonder if you could amplify that a little. For this reason: I met with the ministers and exchanged with them the various reasons why Cabin Creek development is so important to us in Montana. They came back at me and said I was wrong in the facts but one of the points I made was that we have higher standards in America compared to British Columbia. It's their impression that British Columbia has the same air and water reclamation standards as we do in Montana and in the country. In fact, I got into an argument with them. I wonder if you could both now and in the future help develop those differences so we could show the Canadians what the differences are. I don't think that the Ministers that I spoke with, they were the Minister of Governmental Affairs and the Minister of Environment were intentionally trying to mislead me or intentionally misstating the facts, I think they were just ignorant and just didn't know. Could you highlight the major differences?

Mr. TROSPER. The major one that is striking is their discharge standard for water. You can't argue with the facts because their standard is 50 milligrams per liter and ours is 10 milligrams per liter. Air, I'm less clear on air.

Senator BAUCUS. Necessarily under the Clean Air Act of Glacier Park, it's a Class I standard.

Mr. TROSPER. Yes, you know, this varies and of course we're in the process now on a national basis of looking at our air quality emission standards and you can't really accuse the Canadians on air quality standards—of shortcomings on air quality standards, I think you have to be somewhat circumspect because we are in fact pumping out millions of tons of SO_4 and SO_2 and all of that in the East. I think we do better here in Montana than nationally.

Senator BAUCUS. Reclamation standards.

Mr. TROSPER. I think there is no question that we can demonstrate that the reclamation standards for strip mining in eastern Montana which is really not the same kind of situation but they have limits on the slopes and replacing topsoil on a lot of things, that a lot of things they don't even address and you wouldn't consider having a one-to-one slope in eastern Montana for example. You could probably get away with it there but you can't get away with it up here in the heavy snow country.

Senator BAUCUS. I think it would be important for us and for the Commission to develop those differences quickly and soon, either through my office or directly send those to British Columbia, Garde Gerdin who is the Minister of British Columbia's Intergovernmental Affairs, made a point of asking me to send whatever information we have generally so I suggest you send a copy of the study to him as well as the other commissions that you just mentioned.

One or two other points, David—or Bob too, if you could outline for us now what areas the basin study met goals and what areas it did not quite make them. Or to state the same question differently, what data do we have which is practically important to the valley and what data do we not have yet? What further work if any need to be undertaken with respect Cabin Creek or generally?

Mr. TROSPER. I think we would have liked to have done a groundwater study but there is just no money in the budget for that. That's an expensive thing to accomplish. The State, under grants and other agencies are now accomplishing that. There was a need and there still is a continuing need to refine a lot of the work that we have done and to extend it. One of the areas that needs to be looked at just from the lake itself is to look at these antiquated sewer systems—septic systems around the lake. I think we're getting a lot of phosphorus infiltration into the lake but there is really not much we can do about that until we can prove—until we know how bad it is. The whole problem of course in Flathead Lake inches around phosphorus and keeping phosphorus out.

I think those are two of the things that I would highlight. But also the biological station has grants to address the later question that I raise, the later problem, the more fundamental thing that has to be done is that we have got to find monitoring resources, enough moneys to do an adequate level of monitoring to find out what is happening over time and thus you would monitor maybe on a periodic basis, not an annual basis. But it does cost money to take water samples and monitor the critical parameters that we have identified and there is really no system or no funding set up as specifically for this purpose although the Forest Service has a mandate under the 1976 Forest Management Act to monitor their work. But Congress never sees fit to provide the money to be monitoring. They say, do all these things and monitor your work but there is never any money to monitor your work. They say cut the timber but don't measure the effect. We tell you to but we won't finance you to do it. The Park Service has responsibility for monitoring and they should have resources for doing it. The State, the same way. But the thing is, there is no entity or no overall monitoring plan for the basin and this is going to be one of the prime responsibilities of the Flathead Basin Commission, to see that these things are set up and organized and that the funding is in place and it occurs because basically and fundamentally all of the work that we have done in the Flathead study goes for an out unless we continue to monitor it and measure changes over time.

Senator BAUCUS. One other quick thing, if you were to design the study from the beginning with the benefit of 20-20 hindsight, how would you design the Flathead Basin study, differently, if at all. Looking at it from the point of view of July 6, 1983.

Mr. TROSPER. I wouldn't change a thing. I think that the way it worked out, one would hope that you could avoid a lot of the really personal harrangue because here we are, 15 citizens all with different views——

Senator BAUCUS. That's democracy.

Mr. TROSPER. And what was the problem and how to go about solving it and it took a great deal of time to educate each other to bring us to a common viewpoint so we could develop goals and objectives. I don't think I would organize it any differently.

I'm pleased that it worked in this instance. I don't say it would work every place. It worked because we had a high level of interest and a willingness to cooperate. We apparently had a majority to the point that agencies, like the Forest Service and the Park Service and the State agencies, felt secure in raising above protecting their bureaucratic interests and to cooperate in this instance.

Senator BAUCUS. I'll tell you one reason it worked, and there are many, but one reason it worked is the point you mentioned in your testimony which is that you met your budget and you met your time deadlines and this is one of the best selling points I had in the Congress. We're not asking for any more money, there is no cost overrun, zero and we're meeting our budget. We're meeting it on line in each year on what we intend to meet and with that argument, we were able to get Bill Proxmire, for example, on the Appropriations Committee in the last several years. But without that argument, I think we would not have gotten through.

Mr. ALLEN. I would like to thank you personally for your efforts in obtaining that funding for us. It's certainly appreciated.

Senator BAUCUS. It was a lot of fun doing it.

Mr. KLEHM. I would like to say that one reason the whole program worked so well is that we worked to gather certain information to fill the data gaps that we had and we did not, as each member, take stands on the way we felt. We worked as unit for the good of the basin and it was a case where we didn't let our own personal feelings or personal ideas influence or try to get us to direct our strength one way or the other. It was a case where we worked together for the whole thing.

Mr. TROSPER. I would like to make one further point and I think it's a significant one. Our Government, we have a way of really squandering resources.

Senator BAUCUS. We know.

Mr. TROSPER. I don't have to give you any examples but I think that we took responsibilities and we spent the limited resources that we had very, very wisely, we contracted with the people that had the expertise first of all but that wanted the data and were committed to the program, those that were involved in it now and would be involved in it in the future. That's quite a lot different than—what I'm saying is we didn't go out to outside contractors that are coming in and providing a service, reaping a handsome reward and then packing up their bags and leaving the country. The people that did the work live here, they're concerned and because of that, I think we got probably in comparison with other operations, we probably got double the efficiency in spending the money that we would get under a normal contract situation.

Senator BAUCUS. One of the other final points I would have, I wonder if you could review basically the data exchanges between the study and British Columbia Government. That is, the degree to which that is satisfactory or unsatisfactory. What suggestions do you have?

Mr. TROSPER. Well, I always get concerned when anyone asks that question because we have provided the officials in British Columbia with both our interim reports and we have provided them with all of our final reports but it just seems to go into a sink hole. There is no feedback. We don't get much from them and they are amazed that we are spending so much money and developing so much data because they don't have those kinds of resources, those kinds of mandates to do that kind of work. You know, I would like to have some feedback from them. How do you go back saying, well, hey, are you going to use this data, is it helpful, can we give you more data? But there is just no respone. That's why I'm very concerned about the State Department. Theoretically the State Department should be carrying the freight for us. This was the way it's set up.

Senator BAUCUS. Yes, that's tough. I asked the Canadian guys to come in my office last week and, you know, their service was very enthusiastic but I think they generally go to their chain of command, their hierarchy, the Royal Canadian Government and then back to the provinces again and it's tough. It's for that reason I suggest we keep doing what we have been doing, that is, the States dealing directly in many respects with British Columbia. I know the Governor has done that and the other State officials have done that and you have done that and I think we have to continue to do that.

Mr. TROSPER. We will continue to work with the citizens, Senator, and I think one of the things that would help us, maybe energize the State Department, they get really shook up when you go up there and talk to their Ministers. It's a breach of protocol.

Senator BAUCUS. I know.

Mr. TROSPER. They're more interested in protecting their protocol than they are at really looking at their problems.

Senator BAUCUS. Sometimes if you go out of protocol, you get the job done. That's what it comes down to. Thank you.

Senator DURENBERGER. Our next witness, and we are very pleased to have him with us, is the Governor of the State of Montana, Ted Schwinden. It's a pleasure to see you again, Governor.

STATEMENT OF HON. TED SCHWINDEN, GOVERNOR, STATE OF MONTANA

Governor SCHWINDER. Relax gentlemen, I won't go through this whole thing, I'll break it down in short order. First of all, Senator Durenberger, I want to welcome you to Montana, a State that, I believe Max and I would agree, is as beautiful as your native State, Minnesota. I want to thank you for this opportunity to appear before your subcommittee to reaffirm the State of Montana's continuing concerns for both the Flathead Basin and the entire ecosystem of this area in northwest Montana and southern British Columbia.

As has probably been pointed out to you today, the values here in northwest Montana were on the front cover in the July issue of Life magazine in an article called "Nature Under Siege," and the proposed Cabin Creek Coal Mine which is a major area of your hearing here today, of course, is listed as one of the threats to this particular park area and its natural beauty and I think realistically there is no way

that you can accurately estimate the value of the Glacier-Waterton International Peace Park, not only to Montana but to this country, to Canada and indeed to the world because truly it's priceless and I compliment you because I think the fact that you're holding this hearing here today as a subcommittee of the U.S. Senate is a testimony to the value of that park area along with the other elements of the ecosystem here in this area.

As I'm sure you have already heard this morning, the citizens of this area became concerned about the possible adverse impact on Montana's air and water quality with that initial announcement being back several years ago of the proposed coal mine just above the Canadian border. That level of public concern coupled with the State involvement that began with—I think the first meeting that we had up here was when Roger William and EPA and I and other State people met with local folk, that strong State support and the leadership of Senator Baucus and the cooperation of EPA which resulted in the 5-year study that was handled under the direction of the Flathead Basin Steering Committee and I'm sure you have that report. The steering committee essentially compiled and analyzed baseline date on the existing environment of this valley and terminated that study and filed its report just on the 30th of June of this year and then for all practical purposes went out of existence. The legislature, of course, was aware of the demise of the steering committee and they adopted legislation, Senate bill 161, which created on this biennial basis the Flathead Basin Commission.

The Commission will consist of 15 members whose criteria is set forth in the legislature. It includes local, county, Federal, State, tribal, and Canadian representatives. The charge to the Commission is to monitor and address issues of environmental and social concerns to the Flathead Basin as a result of developments that occur on either side of the border.

That steering committee, through the report did an excellent job in defining the environmental conditions that exist in this area and I think fortified with that knowledge, the newly established State Commission will be able to track changes in the environment that result from changes in future land use and developments in and around the Flathead Valley. We will finalize the final membership of that committee in the next week to 10 days and it will be up and running.

British Columbia Provincial officials and the representatives from Sage Creek Coal Limited Co. have assisted in the establishment of a responsible working relationship with the steering committee and with representatives and officials of the State of Montana. The British Columbian folks have actually participated in a number of exchanges of data, of meetings and I have been up in a number of areas with a number of not only citizens of this area but the steering committee and State legislators and others and I think it's critically important that we maintain that continued cooperation with British Columbia and the operation of the newly established Commission.

Back in May of 1982, the State of Montana submitted a pretty detailed 121-page technical document that addressed the major concerns of the State of Montana with the stage II mining application that had been filed by Sage Creek Coal Ltd. with the government of British

Columbia. In general the comments addressed air quality, water resources and aquatic ecology, hydrology and geomorphology, fisheries, terrestrial wildlife, and reclamation of the mine area.

On the 27th of September of last year, 1982, the government of British Columbia responded to Montana's concerns in a 12-page letter. After the State had reviewed the response by the British Columbia government, we submitted a second set of comments on December 17, 1982. That second set of comments was more refined and it addressed issues of water quality and quantity, hydrology, air resources, reclamation, wildlife, stream depletion, and international aquatic resources. Just last week at the Western Governors' Conference here in Kalispell, I was hand delivered, by Mr. Bob Plecas, the official response from Premier Bennett—during that conference and while we have not completed our review of that response, we—I hope that all of those documents are a part of your hearing record and I suspect they have been introduced here today. If they haven't, I would like the opportunity to get them in later, the comments by the State of Montana and the responses by the officials of British Columbia.

Senator DURENBERGER. We will make sure that all of those are part of the record. (See p. 70.)

Governor SCHWINDEN. I would appreciate that because in my informal discussions with Mr. Plecas here in Kalispell just a week or so ago, it seemed increasingly clear that a stage II decision may be imminent. I sent a letter yesterday to Premier Bennett which followed a phone call of some 2 or 3 weeks ago requesting that there be a meeting on the 19th of July between the staff of the Premier and the appropriate staff or Cabinet Ministers from the British Columbia side to meet with our director of natural resources, Mr. Barry; our commissioner of State lands, Mr. Hemmer; and Tim Galliger on my staff; and the purpose of that July meeting would be to discuss in detail the issues that have been the major point of concern and responses between Montana and British Columbia over the past few years. I have respectfully requested that the Premier delay a decision on Cabin Creek until those staffs have had a chance to meet across the table in British Columbia.

And then finally following up on the phone conversation that I had with Bill Bennett, I have extended an invitation, or asked for an opportunity, to meet personally with the Premier, to discuss the implications of the Cabin Creek decision on both our environment and our border relations.

I think I would just simply overfill the record if I were to reiterate the long list of concerns that have already been sent to British Columbia. I do want to emphasize one special area and that's water quality. The proposal that was submitted by Sage Creek in the opinion of our technical people and professional people here in the State, the proposal does not adequately address the issue of water management. It would appear to us that the capacity of the sedimentation pond is too small, their proposed waste dump would be located only about 90 meters from Howell and Cabin Creek, the dumps are approximately three times higher than their distance from the creek and their sediment erosion and revegetation could pose serious prob-

lems on the kinds of steep slopes that they're proposing as a part of their mine operation.

The State of Montana believes and believes very strongly that appropriate mitigating measures should and must be taken by the government of British Columbia and Sage Creek coal or Montana will suffer varying forms of environmental loss. The inevitability of spills and failures, the increased pressure by humans and the possibility of sedimentation and associated water quality problems could result in serious environmental impacts for years to come.

The State of Montana continues to believe that only by maintaining open communication with our Canadian neighbors, and by fostering mutual cooperation, can Montana and British Columbia develop their resources without compromising the integrity of the environment on either side of the border. Through our past discussions on Cabin Creek, we have already opened the door to cross-border communications. We look forward to continued cooperation with the government of British Columbia.

Once again I want to thank you, Senator Durenberger, and you, Senator Baucus, for an opportunity to present this testimony and to express Montana's concern to you and through you to the Congress of the United States. Thank you.

Senator DURENBERGER. Thank you very much, Governor. I would like to go over with you two concerns that I expressed earlier with the panel which are general in nature, the second being probably more specific to Montana. The first is to make clear, and I do this because we have got this deep obligation to all the people in Montana—you also have an international relations problem, you have got three Provinces that border on Montana.

Governor SCHWINDEN. Yes.

Senator DURENBERGER. But it is becoming clear to me, as I get more acquainted with this issue, that this is not an effort on the part of the people of the State of Montana or the State of Montana or the United States to stop coal extraction or any other sort of mineral extraction in a neighboring country. It's clearly a way to share—perhaps the best way to say it is to share a learning curve that a lot of us have been through in this country and that hopefully even in Canada to some degree with other resources, with the things that they have been through, and define that kind of balance which we talked about earlier as a generational balance that becomes very, very important. In other words, from your viewpoint, nobody in Montana is out to stop competition from Canadian coal, is that correct?

Governor SCHWINDEN. I can't speak for everybody in Montana, although occasionally I am forced to do that. I suspect that there is concern among American coal producers in terms of Canadian coal production and competition the same way that there would be a concern between U.S. wheat producers and producers on the Great Plains of Saskatchewan and Manitoba. But the issue, and I think you said it well to begin with, Senator Durenberger, is not an attempt on the part of the people of Montana to tell British Columbia what to do. We have had a recent and I think excellent, example of confrontation, cooperation, and resolution of a transboundary problem over north of northeastern Montana with the construction there of some steam generation

plants and a major mine and reservoir about 4 miles north of the U.S. border. In terms of the International Boundary Commission—or Joint Commission was involved on allocation of water and so forth.

Senator DURENBERGER. That was with Saskatchewan?

Governor SCHWINDEN. That was with Saskatchewan. And we had some difficult days. It's difficult to work across the border but the issue was always to prevent transboundary problems that can be avoided and we worked sometimes with and sometimes despite the cooperation of the respective Federal Governments in Ottawa and Washington. And we finally came out with a resolution that I suspect totally satisfied very few but essentially met the major concerns of the folks on the Montana side of the border.

I think it was President Kennedy who once said we can't expect to impose an American solution on every country in the world. I think we have to recognize that as one of the realities of the Cabin Creek proposal. I think it's also incumbent upon my office, and I've been involved since—really since day one, first with the Governor, with the Cabin Creek proposal and the concerns in this area, that in a cooperative and constructive way, we make certain that the officials and the companies that operate in British Columbia are made fully aware of the level of our concerns and the learning curve that in some of these areas we feel we have experienced here, in terms of what is possible and what is not possible in terms of minimizing environmental problems.

Senator BAUCUS. I might make a point here, perhaps it's a bit presumptuous of Ted but I would suggest that the majority of the people in the Flathead Valley would prefer that the project not proceed. It's sort of a delicate balance here. We don't want to tell the British Columbian Government what it can and cannot do. We don't want to do that. On the other hand, I think probably the economy of the Flathead Valley is enhanced—the economy, let alone the environment, the economy is enhanced if the project does not proceed because if the project does proceed, in some way there is going to be some environmental degradation to the valley and as far as I'm aware, virtually no economic benefits.

Governor SCHWINDEN. I guess I misinterpreted that. Senator Durenberger spoke specifically about competition, the element of whether we oppose it as a competitive coal supplier to the far east, something like that, and I don't think that's ever been an issue.

Senator DURENBERGER. Let me get to the second part of this which is the presumption that if that prospect were to go through as presently proposed with the kinds of safeguards that British Columbia so far has demonstrated it's ability to put on, then Max is right and you are right, it's going to be an economic problem and an environmental problem and a lot of things for Montana but I thought I heard from some of the previous testimony that with the right kind of environmental safeguards, whether it includues air, water, reclamation, and all the other things that people in the timber industry, people in the mining industry, in agriculture, whatever it is, whatever they have learned in this country to one degree or another to live with, that it isn't necessarily your testimony that you can't mine coal in the Flathead River Basin in Canada.

Governor SCHWINDEN. Let me try to respond then away from the issue of whether or not it constitutes a difficult competitive situation

in terms of overseas shipments. I think certainly Senator Baucus is right, given their druthers, so to speak, there are a number of Montanans who would prefer that no development occur north of the border. They would be no different than those people in your own State who felt that the magnificent canoeing area in northern Minnesota was being jeopardized by Canada's construction across the border.

Senator DURENBERGER. Or iron ore or whatever.

Governor SCHWINDEN. That's right. What I guess I'm saying is in terms of the official posture of State government, there is a recognition that we have no lawful authority to impose our will on British Columbia, their constituents, the companies that are permitted under their procedures. And what I've tried to stress in my testimony is that we do have concerns which we feel are legitimate and documented but at the same time we believe it's absolutely necessary to continue to work with the appropriate officials in British Columbia to make sure if the mining does occur, that it ocurs under conditions and requirements and regulations that would guarantee as close to zero impact as possible, if there is impact, then it would be my understanding of our international responsibilities, and we passed the first legislation in the United States under some new legislation, to permit a much easier process of recovering damages, that we are prepared to take those actions too and we hope those things won't happen. But if you took a poll out here on the street, I suspect you would all find that there are a number of people, as Max said, who would prefer that the mine not be developed.

Senator DURENBERGER. Looking at this whole issue in a slightly different perspective, it was suggested by the panel before you, that this whole intergenerational problem that you and I discuss when we get together to discuss severance taxes and you make the very good point about future generations; the point was made earlier that whether it's land development or forest product development or mineral extraction, a lot of that is designed to benefit a current generation. We need to get the coal out so that we can satisfy energy need here or abroad and put the money back into public services and so forth and that would be a British Columbian rationale for serving a current generation. Obviously it helps their nation also.

But the point was made earlier that there is also a price that you pay for that development and that extraction and whether it's agricultural or forest product or mining, there is always some price that is being paid. Usually it's not directly by this generation but it gets passed on into future generations which I sense is what brings a lot of people to this particular issue. It's the subsequent generational problem of failure to provide adequate environmental mitigation and mine-land reclamation and restoration and all of these problems. I heard the argument being made that we needed to impress on British Columbia as we need to impress on ourselves from time to time, that if this generation is going to get the benefit of the energy or the forest products or whatever, they ought also to be willing to pay that extra dollar cost of environmental mitigation. Would that be a fair statement of your own philosophical approach?

Governor SCHWINDEN. What I think you have just done, Senator Durenberger, is articulated as well as I have heard it, the whole philosophy of tradeoff. You pay a price. I would submit, however, that

there is a difference between balancing tradeoffs within the confines of the State of Montana or within the continental United States, but in talking about tradeoffs, you know, one of the things that threw a monkey wrench into our discussions with Saskatchewan was the increased evidence that Midwestern industrial production was causing more and more Quebec lakes to die and there seems to be now acknowledgment on the part of the United States that that indeed was happening and tradeoffs are difficult enough in Montana. When they go across a boundary, they become just excruciatingly difficult to work out because what may be considered an appropriate tradeoff in terms of Canadian decisions may seem entirely inappropriate on the part of the United States. And if for instance, the Premier of the Province of Quebec, were to insist that a plant in Minnesota or Michigan shut down because of damage and that the tradeoff were inappropriate, I'm sure we would have major across-the-boundary discussions and that's what makes Cabin Creek not a unique problem but obviously because of the concentration of Canadian population within 100 miles to the border, a problem is going to surface more and more often, and I think our experience in Montana, in working out the resolution in a responsible way on the Poplar River Point, is a precedent kind of setting process that we hope will also work in British Columbia. I'm not sure how you ever work out your canoe—the boundary waters areas up there with the Canadian plant but it may well be that before very long and this totally top of the head and perhaps the Congress has already done this or maybe the Congress should be considering in conjunction with our counterparts in Canada, the creation of a body somewhat comparable to the International Joint Commission to begin to look at other areas than just water and border issues because it seems clear to me at least transboundary pollution issues dominate more and more of Canadian-American relations.

Senator DURENBERGER. I'm very pleased that we have followed this. I know time is valuable today for everybody but I'm very pleased that we have followed this line of discussion because you did take us beyond the immediate issue to the broader international aspect and I think that's very appropriate. Max and I are very frustrated sitting on the Environment and Public Works Committee in dealing first with the notion that there really isn't an acid rain problem until every scientist in the world can somehow or another demonstrate that he has all the "I's dotted and the T's crossed" and we know exactly how to handle it.

I think in recent months, for varying reasons, we have moved past that point to the question of precisely how you do it and we had a huge problem in this country compared to Canada. I don't know all of the truth of the matter but if you have most of your power coming from hydro or some other alternative and your major problems then become your smelters or mining operations, at least still sticking with sulfur dioxide you come back down into the United States and you've got 90 percent of your problems are going to be in energy generation and the other 10 percent on sulfur dioxide going to be somewhere else plus we have the huge nitrogen oxide problem. But coming to grips with that in the United States is a very difficult issue and until we do, I'm sure the Canadians will always be able to hold that over our heads on some of those other issues.

So I guess I read your last statement to be a message to us to take back to Washington and expand on even though you're preaching on this issue to the converse, we need to take that kind of message jointly to colleagues in other States that we just have to come to grips with the acid rain issue a part of the solution of all of these transborder problems.

Governor SCHWINDEN. I would put it in the whole area which I think is appropriate in terms of your subcommittee's responsibility of environmental oversight. It goes beyond just acid rain or coal mines or whatever, it goes to what I think will be increasing points of controversy at border points, either because of acid rain or any of those kinds of things moving into eastern Canada. And I suspect we will have some of those in the western part too or comparable Canadian developments that occur on their side of the border and I think we need a mechanism because what ultimately is done in those areas affects the entire border in the same way that the border pricing of natural gas is applied all the way across to the significant detriment of Montana.

What essentially may be worked out back in the Congress in terms of those resolutions or establishing a mechanism is going to have an impact on the way we work these things out because the alternative it seems to me would be increasing recriminations across the border and an almost, you know, by-God-this-time-we'll-show-you-what-it's-all-about and I think that has to be avoided because the two countries share too much.

One of the delightful things about our conference last week, we had Senator Lowry as one of our guests and speakers and Prime Minister Devine from Saskatchewan and the representative and minister from British Columbia. There is an increasing awareness that when you speak about west any more, you're talking about western North America rather than west of either Canada or the United States. With the shared concerns and attitudes I think on both sides of the border, it's going to be worked out. I think it's going to be worked out here in terms of a model facet more than it will be back east. At least reading the national media, it seems to me the problems between Joe Brennen in Maine and Dick Celeste in Ohio have also some magnitude in terms of who is doing what to who.

Senator DURENBERGER. My last question deals with the organizational approach to the future. In your statement you indicated that the Montana Legislature this year passed a 2-year authorization for the Flathead Basin Commission and I asked Mr. Trosper earlier to explain part of his testimony in Washington before the House committee in which he felt that with the management of the land and water areas in this large basin that we're talking about here, he made the point that from a Federal standpoint, a lot of the lands are managed by a variety of bureaus with few common linkages in terms of protecting the resource base. This is one of our difficulties, he said, because of the way we have gone about slicing up the country, we give jurisdiction to this agency and that agency and we give the counties and States responsibilities for land use management, and he says: "They have done a horrible job up to this point." I read not only in Life magazine but Time magazine that there are some ranchers out here that are now being called sodbusters. Is that what they're called? They're

cutting it all up and letting stuff blow over to Minnesota. All the people in Minnesota are coming west and the soil from out here is coming to Minnesota. But on this where-do-we-go-from-here, we don't want the Federal Government or any government to come in and impose land use standards or a lot of those things on us.

Have we learned a lot from this process and from other processes about how some local, State, and Federal agencies might come to common conclusions that sort of transcend their individual jurisdiction? How do you see Montana through this legislation, for example, or other legislation, trying to approach a variety of problems that will affect this particular basin? It certainly isn't just the coal mine up north. I've got to get a plug in for my solution to non-point-source pollution and is related to agriculture and forest products and so forth. Is there a way, in Montana, that you feel you need to go in the future to address some of these problems?

Governor SCHWINDEN. Well, it's impossible to answer that briefly and I can't do that. Let me try to do it this way: Let me say, first of all, Senator, I think there are no quick fixes in this area as there are in any other areas. There are no proven solutions, guaranteed ways. The International Joint Commission may solve the allocation of water between Canada and the United States but it didn't solve the water quality and the pollution issue. The process we are involved in at Poplar and Canada, in the Eastern part of the State, hopefully can be repeated here and that does—you have even more players here than you had there. There you had the Indian tribes, very minimal Federal involvement because of the lack of Federal lands, heavy State land involvement, the private land sector and so forth. It takes I suspect some combination of the wisdom of Solomon and the patience of Job to work out especially transboundary problems. We have enough difficulty in working out U.S. problems. And with the very heavy presence of the Federal Government throughout the entire West, some 30 percent here in Montana, and the Commission—the new Commission reflects that, it reflects not only the Federal agencies assigned environmental responsibility like the EPA but I'm sure you're going to hear from Bob Haraden or a representative of Glacier Park here today, the Forest Service, State agencies and so forth.

I don't think there are any solutions. We simply are going to have to find I suspect ways again to balance in this case not only the environmental tradeoff but the jurisdictional responsibilities and there are hopefully signs that the Federal presence will get less and less and some more of those responsibilities can and I think should rightly come back to the States. I think we have a responsibility through agencies like the commission to simply work together, not only with the American areas of jurisdiction and their representatives but also with the British Columbian people. If they will cooperate. I guess you and I didn't run for these jobs if we thought it would be easy. It's a challenge. You share that challenge in the Congress as we do out here. We wrestle with them all the time.

In the case of the sodbusting, it is becoming a serious problem in terms of potential damage to land that is very fragile and the people over in that area are very conservative by nature and by instinct are struggling with that very difficult choice between imposing controls on themselves and their neighbors or letting things go to hell in a handbasket. I think they would tell you it's not an easy bout either.

I suspect more and more of both your time and my time will be involved in trying to address that problem, not in a brief way but in a responsible way.

Senator DURENBERGER. Thank you.

Senator BAUCUS. Frankly on that same point, I tend to think this Commission is a perfect example of the direction in which the solution to this question is going. That is, Washington is a long way away from Montana, Ottawa is a long way from Vancouver, Victoria, British Columbia, and Federal solutions because our country is so big and we tend to get so complicated that nothing really happens unless there is an absolute crisis that is perceived nationwide and not just locally.

So a lot of these solutions are worked out very locally and I think there is a need for people in Washington to recognize that, not only State but local communities, for them to work out their own problems in their best way with whomever it is that they're working with.

Senator DURENBERGER. My problem is, if I need to protect my grandchild and I can't get my neighbors' cooperation to help them, then I go to some higher level and that's what we're all struggling with.

Senator BAUCUS. I know, but I'm just saying the higher level works against our positions.

Governor SCHWINDEN. Let me reenforce what you said, Senator, and I think Poplar again provides an excellent example. Without being discourteous or critical of the Department of State, one of their policies is to rotate their people every 2 years in terms of their responsibility and I think in the course of the Poplar discussions that we went through, I'm sure four and possibly five individuals all of whom I'm sure when told what their assignment was, the first thing they said was "Where in the hell is Scobey?" Some of them took a real personal interest, otherwise, it was fairly apparent from our side that they really weren't looking forward to their next trip our west.

Senator BAUCUS. Did you plan it in the summer?

Governor SCHWINDEN. Well, in that part it's pretty much summer year round.

Senator DURENBERGER. That's a Montana definition of summer.

Senator BAUCUS. I have a couple questions here, Ted. As you know and we discussed this earlier, I met with the British Columbia Ministers some weeks ago and they were under the impression that Montana's environmental standards are equal to British Columbia or to state it differently, the British Columbia environment standards are equal to Montana standards. We got in an argument over this. So it would be helpful to us in the State if you, in your office, make it clear to British Columbia that we do as near as we can tell, if that is in fact the case, have a higher reclamation, air and water standard than the British Columbia Federal Government.

Governor SCHWINDEN. OK.

Senator BAUCUS. I tried to make that point clear to them. One example that came to my mind was the class air I standards that apply to Glacier National Park but it would be helpful to us in Montana if your office could get that point across to British Columbia very quickly before they act definitely on that stage II application.

Governor SCHWINDEN. Let me try to very briefly respond to that.

Senator BAUCUS. Before you do, to help you in your response, the Minister has told me, it's the deputy and the subdeputy ministers,

that's the staff people, civil servants, who are working on this. The ministers themselves were not aware of the specifics at all. You know, in fact, one of the ministers unfortunately asked, "What is the problem down there, is it noise pollution? Is that the problem?" And that was Garde Gerdin. I explained to him, no, it's not noise, it's air and water and so forth and also bull trout spawning and so forth.

So the Ministers themselves are not as aware of the problem as I thought they were. So one of my main purposes up there was to raise the profile of the issue in their minds. But anyway, the Ministers themselves at that time, a couple weeks ago, felt that Montana standards were just as strong as British Columbia.

Governor SCHWINDEN. OK, I think two points: First of all is that we could certainly furnish you that information but I think what you will find is that there are confusing elements within the comparisons and I think if I'm right, the Canadians basically use ambient air quality as the controlling factor on a powerplant where we will use site specific air quality regulations and those two go like this rather than like this. So the other thing is, their process of approval of a permit application is somewhat different. The stage I, II, III in their last response to us in every case they say, that's an issue to be addressed in stage III and we essentially have only one point at which we say either mine or don't mine. That's an oversimplification but that would be basically the case. I mean, when all the information is in, all the requirements have been met, the regulations have been satisfied, then the mine permitted.

I suspect that the stage II-stage III process is one that becomes increasingly difficult to stop as the momentum gathers in terms of the investors, the company and so forth.

So there again you have difference. In fact, if you had introduced in the record, you're aware that the Premier's response that was hand delivered here last week, and I think every question responded by saying that's a matter that will be taken up at the next stage——

Senator BAUCUS. That's correct, however two points: It's my firm impression in talking with the Minister that stage II, if granted, is tantamount to total approval and stage III—yes, that's correct, stage III, is different. The stage III is only different in that that's when individual particular permits are granted. Stage II is an agreement in principal, stage III is an individual permit.

But here is the major difference, even though stage III is the individual permit, when permits are granted, if they are, under stage III in British Columbia, the standards there are lower than they are in Montana, even at stage III.

So in fact, it's irrelevant whether it's stage II or III. The point is that the standards are lower in British Columbia, whether it's stage II or III and the standards are lower in British Columbia than they are in Montana.

Governor SCHWINDEN. In some places we clearly understand that. I simply wanted to point out that we do not have the equivalent of a stage II-stage III classification.

Senator BAUCUS. That is correct.

Governor SCHWINDEN. In some of our mining requirements which I'm more familiar with personally, their sulfur requirements are less stringent than those in Montana and I think we can document that in

most major areas of air quality, water quality, mining requirements and so forth.

Senator BAUCUS. Just to help you out there, Thurman Trosper preceded you and he did indicate there was a difference, particularly in water for Montana's higher standards.

Governor SCHWINDEN. I think we could run off a kind of cross check chart which would essentially show——

Senator BAUCUS. That would help our case a lot. Second, I'm very happy to hear you in very certain terms unequivocally state Montana's concern about the production because again when I was in British Columbia, as you and I discussed by phone about a week ago, it's their impression that the State of Montana wasn't as concerned as say I was, I just told them they've got a tiger by the tail if they proceeded. And they said, well, the State of Montana isn't that concerned about it. And to return to your earlier testimony, I think that helped clear that up and I appreciate that very much.

Governor SCHWINDEN. I don't know how to emphasize it any more strongly. It seems to me that we have had a very strong involvement which involved a lot of other people other than Ted Schwinden. Many local people here, the steering committee, the efforts over the last year, the funding, the baseline data that has been gathered, the 121 pages of documented concerns. I think that is not a—"Well, gee whiz, it isn't all that bad."

Senator BAUCUS. I appreciate that. I'm just trying to tell you what their reaction was when I met with them. I'm glad you helped clear that up. I appreciate it.

Senator DURENBERGER. Governor, thank you very much.

Governor SCHWINDEN. Thank you very much.

Senator DURENBERGER. Our next witness will be Mr. Seth Hunt, Deputy Regional Administrator for the Environmental Protection Agency from Denver, Colo. Let me say, Seth, as you're coming up, we are aware that we had you ahead of the Governor on the witness list, but I noticed that he arrived and thought we better let him in ahead of time since under the new theory of the way we're involving ourselves with the State and local governments, I'm sure that that was proper to let the Governor go ahead of the EPA Regional Administrator.

We welcome you and we welcome your statement in total with its attachments that will be made part of the record. If you want to summarize it in some fashion, it would be helpful.

STATEMENT OF SETH E. HUNT, ACTING REGIONAL ADMINISTRATOR, REGION VIII, ENVIRONMENTAL PROTECTION AGENCY

Mr. HUNT. Thank you. I appreciate the opportunity to appear here before you. I did bring with me two employees of our Montana operations office. I think it's significant that both of them are on vacation and this is their part of the State they come to for vacation and yet they're both willing to break their vacation to come here and sit in on the hearing.

If you have any questions, I would like to refer the questions on to them.

I am Seth Hunt, the acting Regional Administrator, this week anyway. We have a new Administrator—Regional Administrator named, who will be on board next week and I am a little pressed for time——

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Senator BAUCUS. Mr. Hunt, do you know where Scobey is? I'm sorry, I couldn't resist.

Mr. HUNT. Anyway, we do appreciate the opportunity to appear before you and offer some of the Environmental Protection Agency's perspectives on environmental issues related to the Flathead Basin and its magnificent environmental resources. We greatly appreciate your concern and all the work you have done in protecting this environment here, especially Senator Baucus. You have done a lot of work on this and the people in this area and this part of the country are very appreciative of your efforts.

We do not intend today to dwell on the great beauty and the high quality of the environment of the Flathead River Basin because you are most familiar with that. Besides, what words could a Denverite use to really do justice to an area crowned by Flathead Lake and Glacier Park and the Bob Marshall Wilderness area. We do not intend to speak in depth of the exact composition or the nature of these environmental resources. The Flathead Basin study has generated a very comprehensive catalog of this information and several of the highly qualified scientists who participated in the gathering and the interpretation will speak to you later on these matters. What we would like to address is the worth of the Flathead basin study itself, and second, offer some observations on the threat of the environment in this area posed by the Cabin Creek or the Sage Creek mine.

When it comes to commenting on energy development projects, we are aware of the delicate national and international concerns. At the EPA, we want to recognize the need for energy development and related economic and industrial impacts. However, the primary purpose for our existence is in our title, Environmental Protection. We do want to strike a reasonable balance between these sometimes conflicting forces, but it should be known that if we are going to err, we want to err on the side of environmental protection and our comments will reflect this position.

It has been over 5 years now since the Environmental Protection Agency was ordered by the Congress to conduct the Flathead Basin environmental impact study. We have learned a great deal from this effort, both of a scientific nature and with dealing with concerned citizens. We sincerely believe the study has been of immense value and has gone far toward setting a firm foundation for protecting the environment of the beautiful Flathead County. We think it has been money well spent by the Congress through our agency in pursuit of this goal shared by many in Montana and around the Nation.

One unique aspect of the Flathead Basin study, and of its strengths by the way, is the fact that it has generated important background information on the environment before any major projects such as the Cabin Creek proposal are actually developed. We are dealing with an environment already greatly altered by man's activities, activities which have had very substantial cumulative effects, such as the Hungry Horse Dam, thousand of miles of roads, large scale timber harvest, among others, but now we are in a much better position to actually plan for and set up mitigation for major impacts before they go beyond approval stage. In other words, and in comparison to other projects in which EPA gets involved, we are far in front of the so-

called power curve in the Flathead Basin. This is not a typical situation and the Congress and the Flathead area people who originally pushed for the study deserve credit for their foresight.

A second unique aspect of the study has been the steering committee concept or approach to its management. As you know, although EPA was ordered to conduct the study, the idea for the effort came through Flathead area citizens and through Senator Baucus, then a member of the House of Representatives. Roger Williams, one of my predecessors, the Deputy Regional Administrator of the EPA, in consultation with then Lt. Governor Ted Schwinden, decided to tap this great local interest and expertise through the creation of the 14-member committee.

EPA's agreement with the committee was that if, the committee, would make all the funding decisions, that is, they would decide which studies were to be undertaken as long as these studies were compatible with the express intent of Congress and the various Federal regulations. The success of the steering committee on carrying out this mandate is a real tribute to citizens and local government interests. Although EPA and the steering committee have had their share of misunderstandings, and times were not always easy, we at EPA are quite pleased with this groups' performance and I want to publicly compliment them for their long and hard work on this project.

Several years ago a dinner was held honoring Leland Schoonover, the first chairman of the steering committee. "Schooney" as he was known to his friends, died several weeks after that dinner, but the study was off to a good start toward his goal of helping preserve his beloved Flathead country. EPA's Regional Administrator at the time, Allen Merson, made an observation that evening about never ceasing to be amazed by how people of talent and dedication rose out of the local level when a job needed to be done. How fitting that is for not only Schooney but also about the many people representing diverse interests who served on the steering committee. If the Flathead study is to be of long-term value, it will be because of the involvement of citizens, industry, and employees of the local, State, and Federal agencies who must live in the basin and work for its protection on a day-to-day basis.

We believe the steering committee made a wise decision when it made its selections on who would conduct the various studies. The emphasis on selecting outstanding scientists who had long-term knowledge and commitment to the study area was a wise move. This will help assure the practicality and actual utilization of the abundance of information and understanding that has been gathered.

Last, the EPA would like to congratulate the Flathead area's elected representatives and Governor Schwinden for their support in creating the permanent Flathead Basin commission. This commission will be an important tool in seeing that our 5-year effort is utilized and that it fits logically into the ongoing and future study efforts that will obviously occur.

Now, turning to the proposed Cabin Creek coal mine. It is indeed unfortunate that a large deposit of high grade coal has to be located in a wild mountain valley with an environment so little spoiled it can boast of the grizzly bear, the timber wolf, and the congressionally

designated Wild and Scenic North Fork of the Flathead River. Though we can do nothing about the location of the coal, we can do much to influence our Canadian neighbors' decision on how to and if it should be mined.

These efforts to negotiate with the Canadians are not, however, an activity over which the region VIII office of the EPA has authority. These matters are appropriately under the jurisdiction of the Congress and the Department of State. We are most encouraged that your Senate committee understands the importance of Canadian activities to the Flathead Basin and we hope the issue can be resolved. Our remarks will be confined to the specific environmental issues posed by the proposed mine.

We will begin with several general observations. First, the Flathead Basin study has been underway for some 5 years, resulting in a complete understanding of the North Fork ecosystem, and this information has been freely exchanged with Canadians. Hopefully, this has meant a much more cautious attitude on the part of the British Columbian Government on approval of the mine. In contrast, we had little information on U.S. impact related to the Poplar River powerplant across the border in eastern Montana until after the plants were actually constructed. This has obviously not been the case with Cabin Creek.

Second, we will not deal with the intricacies of the scientifically generated data on the North Fork area. There are several highly qualified researchers here today who can better speak on those subjects. We will, instead, attempt to highlight the major potential impacts. We have attached to our testimony here a copy of EPA's 1982 comments on Sage Creek coal's stage II application as an addendum.

Our summary of the potential Cabin Creek coal mine impacts include the following: First, the water quality. Almost 500 acres of erosive mountain land will be disturbed in an area of high precipitation and known severe storm events. There will also be large wastes dumps and tailings ponds. There will be a very real, long-term threat from sedimentation in the North Fork and eventually Flathead Lake itself.

Sediment and accompanying phosphorous could have an impact on the whole Flathead Lake system, which is a phosphorous-limited system. The project could also add significant levels of nitrogen because of the blasting going on during the coal mining.

Second, we are concerned with the fisheries. The mine site is also the site of the North Fork's most important bull trout spawning area, the Dolly Varden trout, along the lower end of Howell Creek. This area could very well be lost with the placing of a very large mine adjacent to it. Also, increased sediment loads could have severe impacts all the way to Flathead Lake.

Third, air quality. Air modeling, which is being done by the Montana Air Quality Bureau, reveals a potential violation of the Glacier Park class I visibility standard. Though ambient air quality standards would probably not be violated, there undoubtedly would be degradation of the pristine air resource.

Fourth, wild life. Although under the jurisdiction of our State and Federal agencies, we would point out that the potential industrial-

ization of the North Fork Valley as a result of a large coal mine would probably have wild life impacts. The probable loss of the United States only wolves in this area and the further isolation of the Glacier Park grizzly bear population are two examples.

Senator DURENBERGER. You better stay in this area because we have some in Minnesota.

Mr. HUNT. In this area. Finally, we are concerned about the future. The coal mine could be expanded beyond its 21 year life, potentially right under Howell Creek. There is another coal—great coal deposit in the area. With the set investments in road, powerlines, process equipment, and work force, future and continued industrialization of the area is a real possibility.

In light of these important environmental concerns we believe it is essential that we learn from our Canadian neighbors their current plans for this project and in particular, we want to be apprised in detail of the specific steps they will take to prevent the potential environmental dangers that could result from its implementation.

On the more positive side, we would be remiss if we did not point out that a great deal of time and effort has gone into studying the environment and mitigation measures by the Canadians, both by the people of Sage Creek coal and the British Columbia Government. We strongly support their proposals for an environmental reclamation fund and for a willingness not to divert Howell Creek as was once planned. This is definite and positive sign and advantage of up front planning and input.

In summary, we believe the mine will probably lead to some level of long-term degradation of the North Fork River, and possible Flathead Lake. Sedimentation and enrichment of the waters will take place, spills and failures will undoubtedly happen, human pressure will increase, wild life habitat and wilderness values will be lessened, this, even with the best of mitigation measures. The relatively unspoiled and pristine nature of this wild country will change and the U.S. side could suffer environmental losses.

In closing, we would point out that Canadian activities are not the only threat to the Flathead Basin. Much is occurring on the U.S. side and much more will be proposed in the future that will impact the environment. We must continue to take a basin-wide view, to work for proper planning and regulation at all levels of government, and to continue the spirit of cooperation and local concern as exemplified by the Flathead Basin environmental impact study. Thank you.

Senator DURENBERGER. I thank you for your testimony and as I indicated earlier, not only the statement but the attachments that you referred to will be made a part of the record. Max.

Senator BAUCUS. Seth, I appreciate your comming. Do you have any general observations about the Flathead Basin study? That is, what recommendations you would have if the Congress were to again decide whether or not to have another study either here or in another part of the country? That is, would you set it up any differently?

Mr. HUNT. Well, I have not seen the final study yet. I have not been that closely involved personally with the study but what the staff tells me, the study has been truly successful. Obviously it did cost quite a bit of money and thanks to your efforts we were able to complete that.

Whereas it does have a lot of value and certainly has done a lot of good as we tried to point in our testimony, I'm not sure that as a country we can use this as a prototype on every major project. It's quite expensive but certainly this study should be shared throughout the country because the issues that were raised, the mitigating measures that were suggested, certainly should be shared throughout the country and I think that this kind of long-term planning points out very clearly the advantages of doing a lot of up-front planning on environmental protection measures. And as you have heard so many times this morning, when you compare the cost in terms of the long range and long term impact, maybe those costs are not all that expensive.

So at this point I cannot suggest what other changes we would make. I could defer that to Dean Taylor, who has been on the steering committee as EPA's representative from the very beginning. If you would like, I would invite Dean to come up here.

Senator BAUCUS. Well, unfortunately we have a lot more witnesses and time is running quickly. I was just wondering off the top of your head, would you indicate any changes, if any, that you would recommend if Congress again decides whether to have a basin study.

Senator DURENBERGER. It would be helpful if you would just submit your comments in writing.

Mr. HUNT. Yes, I would like to do that.

Senator BAUCUS. That would help us a lot.

Senator DURENBERGER. Thank you for your testimony. I would say to the research panel that we are required by our agenda to take a 10-minute break right now for a small press conference. I don't know where it's going to be. Maybe right here or out in the hall unless there is a conference room some place. So I would say to the patient members of the research panel, Dr. Jack Stanford, Mr. Pat Graham, and Mr. Hal Robbins that we will be back in 10 minutes.

Senator BAUCUS. Just so everyone else knows, we will not have a lunch break. We will just keep going straight on through.

(Whereupon a short recess was taken.)

Senator BAUCUS. The hearing will come back to order. The next witnesses will be a research panel of Dr. Jack Stanford, Pat Graham, and Hal Robbins. Why don't you gentlemen proceed in any fashion you wish.

STATEMENT OF DR. JACK A. STANFORD, BIOLOGICAL STATION, UNIVERSITY OF MONTANA

Dr. STANFORD. Thank you Senator Baucus. I'm pleased to make a few comments here and I would like to offer my written testimony and start out by saying I think most of our results and concerns are expressed very well within this final document here and we also have a number of final reports that have been published and so on that people can refer to for the details. So my comments here have been written in order to try to hit some highlights that I think are problems that come under the general term of oversight and proceed with it in that way.

The point that I'm about to make I think underscore four basic observations that the derived from my studies of the basin's aquatic resources and I would like to say that I'm real happy to hear Senators

and Governors and so on using words like geomorphology and limnology because it shows that some of the technical aspects are rubbing on people that are trying to make the decisions and that's real encouraging. Also I would say that those of us that were technical people working on the steering committee were educated quite rapidly by the steering committee. We had to back up every once in awhile and define terms so we were always talking on the same level and that's an important concept to remember as you ask about whether or not this concept might work in another area.

There are four basic observations that I think we should keep in mind in terms of the limnology of the system. The waters of the Flathead contain very low concentrations of solids and I'm talking about dissolved solids, and suspended solids, although suspended solids do increase during spring runoff. But this low concentration not only limits biotic productivity which is an important attribute of high quality water but the low concentration also renders the system extremely sensitive to environmental pollutants. It doesn't take much to change things here, particularly substances we find in sewage and in acid rain.

Second, regulation of water flow by Hungry Horse and Kerr Dams presently exert the greatest negative environmental impacts on the aquatic system, at least in terms of what we have measured to date.

Third, sewage pollution from urban areas is rapidly degrading the quality of Flathead Lake.

And finally, we concluded that the likelihood of substantial water pollution downstream of the Cabin Creek Mine is extreme if the project proceeds as presently planned.

Now I group the rest of my comments in terms of specific points underscoring these major observations. First on the Flathead Rivers. We have established that the unregulated segments of the riverine environments are high quality, if not pristine. We have a large data base now and we can in the future decide whether or not conditions have changed. However, there are a number of questions that—at least three that require some resolution before we are able to project the future of the river conditions. First it appears that we are seeing unnaturally increased erosion in the downstream reaches of the larger tributaries. Simply stated, the data indicated that increased water yields from clear cuts due to loss of evapotranspiration from the forest canopy, these increased water yield are causing accelerated mass wasting or erosion of the river banks.

Increased sediment loading is causing changes in channel configuration. We're seeing more meanders than historically and it's causing more downstream transport of fine sediment and these fine sediments reduce water quality directly by clogging and scouring actions on biota and indirectly by fertilizing the water and promoting algae growth. Thorough examination of land use and water and sediment yields in basin streams is needed. We are especially in need of such information on the North Fork where mining, logging, and over development interests are colliding head on with the preservation interests in Glacier National Park.

A second concern relates directly from the Cabin Creek Mine site and this has been mentioned earlier this morning. The Canadian regulations permit discharge of 50 milligrams per liter suspended solids

from tailing ponds. Streams in the North Fork and other areas of this basin which are fourth order and smaller, that is the size of Howell Creek, never—never reach suspended solids load of milligrams per year even during spring runoff. In the final report of the Flathead River Basin study, it's recommended that a 15 milligram per liter standard be established and the discharges occur only during runoff. This is a reasonable alternative but it's going to require some very close monitoring. Presently the monitoring program at the border—the North Fork, at the border, is limited to quarterly sets of water samples collected by the U.S. Geological Survey along with monthly sets for analysis of a limited set of parameters under a cooperative agreement between the University of Montana Biological Station and the National Park Service. So the monitoring program at the border is fairly limited.

A third concern on the river is that the extreme sensitivity of waters in Glacier National Park and the Mission Mountains to acid rain has been emphasized in this report and data are included there to support why these waters are so sensitive to acidity. My biophysical data from high altitude lakes and streams that might be impacted by acid rain are large and through examination of those drainages thought to be most sensitive such as Dutch Creek in Glacier Park which should be undertaken immediately. There are new data also collected recently that acidic snow has been deposited in the basin within the last winter suggesting this is a problem that should be given high priority for detailed evaluation.

Oversights concerning Flathead Lake, the quality of Flathead Lake, is directly dependent on the kinds of nutrients and the amounts of nutrients from a variety of sources that flow downstream in the Flathead River. Presently phosphorous concentrations in sewage and attached to sediments is of greatest concern. Further increase in phosphorus loading from these sources will accelerate the eutrophication process in the lake. The inputs of nutrients and concomitant response of the phytoplankton community must be closely monitored otherwise we won't know if we're making any improvement or we're going the other way. All such measurements have now ended because the funds we were doing the work under have now all been used.

A second concern, and this is primarily one that I am especially concerned about is that the Bonneville Power Administration has funded large scale investigations of the Kokanee salmon fishery in Flathead Lake. I want to emphasize right off here that these fishery investigations are badly needed and are being very competently done. My concern is that the ecosystem level perspective fostered by the river basin study is being a little bit overlooked by EPA. What I am driving at is, were it not for the large volume of water that annually moves through the lake, the nutrient problem that we illustrate in our research would be much more severe. This would be because the abnormal nutrient loads are diluted so greatly by the lakes' annual water budget. Water in the lake turns over every 2½ years. A change in the lake's water budget by new release regimes from Hungry Horse and Kerr Dam in order to enhance Kokanee production might backfire because of unforeseen impacts on the changing trophic status of the lakes.

Furthermore, I am convinced that the introduced opossum shrimp mysis relicta, is well on its way toward becoming a dominant member of the lakes' food chain.

Recently at the biological station we collected juvenile shrimp in shallow waters off of Yellow Bay which give us the strong indication that the critter is establishing very well in the lake. This may impact the salmon fishery in a negative way, since the shrimp and salmon are dependent on the same food items and the shrimp are much better adapted for catching those food sources, while at the same time avoiding the Kokanee by staying on the lake bottom in daytime. On the other hand however, and I want to emphasize this, lake currents, which we know very little about, the currents which move water around in the lake and are also influenced by regulation, may make the shrimp available as food for the Kokanee in some parts of the lake such as the narrows where we have shown there may be an outflowing current by sweeping the shrimp off the bottom during the daytime.

My point is simply this: A single resource management will not be successful in a system as complicated as the Flathead. New research should have clearly defined objectives which are based on present understanding of the ecosystem as a whole.

And then I'll conclude my comments with some suggestions of actions that might be considered.

In view of the findings of the river basin study and in consideration of the specific concerns I have raised above, I hope this subcommittee will recognize that monitoring recommendations made by the steering committee must be acted on as soon as possible. The water quality monitoring program on the North Fork at the border should be intensified and emphasized a major study of sediment transport. The U.S. Forest Service should become a partner with the National Forest Service to fund such work, as well as funding adequate research of stressed stream systems within their respective jurisdictions. I'm talking about things like water and sediment yields from clearcuts and acid rain impacts that may occur. Additional funds are needed to monitor nutrients and primary productivity which are measures of the eutrophication process in Flathead Lake.

I also hope the subcommittee will realize or recognize that while Cabin Creek hangs as a threat over the basin, the quality of Flathead Lake continues to decline due to the inability of sewage treatment systems to handle the increased population of the Flathead Valley. Many aspects of the limnology of the lake remain unknown, but it is clear to me that we are rapidly approaching a threshold beyond which the present quality of the lake will not likely recover.

To decrease the impact of nutrient pollution on Flathead Lake, I have recommended as an outgrowth of my research three things, first the Evergreen area must be sewered, second, that direct discharge from sewage treatment plants be curtailed or eliminated and that is for the Flathead River and Lake and third, that the Forestry practices in the drainage emphasize regrowth of canopy to reduce erosion, the erosion caused by increasing water yield from the cut areas.

To put such options into effect will require an earnest commitment by the citizens of the Flathead Valley, the State of Montana and

probably will require also Federal assistance. The alternative, whether Cabin Creek Mine becomes a problem or not, is a very green lake. Thanks a lot.

Senator BAUCUS. Thank you, Jack.

Senator DURENBERGER. Who's next?

STATEMENT OF PATRICK J. GRAHAM, MONTANA DEPARTMENT OF FISH, WILDLIFE, AND PARKS

Mr. GRAHAM. My name is Pat Graham. I directed the fishery study for the Department of Fish, Wildlife and Parks under the direction of the Flathead River Basin Environmental Impact Study Steering Committee. The study was limited in scope to Flathead Lake and those major tributaries to the lake into which the fisheries still migrate.

Water resources were the major focus of the Steering Committee studies in recognition that impacts from disturbances in the upper basin could potentially cause changes over 100 miles away downstream in Flathead Lake. I point that out because I think it's significant in the success of this study that the Steering Committee did limit the scope and not try to do too much with the money that they had available. It's common to ask researchers to go far beyond the budget that can be realistically expected to achieve that and unfortunately as researchers, we always take it and say we're going to do it anyway.

The Westslope cutthroat and bull trout are native to the Flathead and the Flathead is home to the single largest remaining population of these species in the State of Montana. Like their cousins, the Pacific salmon, cutthroat and bull trout migrate downstream from their natal streams in the headwaters of the basin after rearing for 2 or 3 years. Some remain in the rivers, but most continue to Flathead Lake to grow to maturity before returning to spawn.

Plentiful winter snows, the mountains scoured by glaciers and our crystal clear rivers that attract millions of visitors to the Flathead each year are the same quality favoring the evolution of the migratory habits of its native fish species. The water is cold and sterile, the growing season is short, the stream gradients are often high and many of the glacial soils are unstable. Those fish which migrate to the more productive stable habitat in the lower river and Flathead Lake gained a competitive advantage over the stream resitents despite the stress of migrating long distances. Migrants grew faster and larger and produced more eggs. Cutthroat, which remain in the tributaries, seldom exceed 9 inches in length but migratory cutthroat can grow to twice that size.

This establishes two important constraints in successfully managing the Flathead fisheries. First, they must have unimpeded access through the river system to complete their life cycle. They lost access to the Swan River Range in the South Fork on the Flathead right now as a result of dams.

In addition, an impact on the fisheries in one part of the basin will likely have a direct impact on the quality of the fishery in another part of the basin. A wide distribution of tributary streams and aquatic re-

sources also makes the fisheries vulnerable to cumulative impacts.

In highlighting our study efforts, I'll try to show how these impacts may occur. I hope it's obvious that this time of discussion would be only hypothetical without results from this basinwide study. In closing, I will describe some important outgrowths from the Flathead study which will likely have regional significance.

Habitat classification and fish counts were conducted in 92 tributaries in the North and Middle Fork. Fish density and habitat information was used to determine habitat variables important to fish rearing. These variables were then used to develop a model to predict fisheries potential of a stream reach. This kind of information will be valuable in assessing habitat changes over time and directing future management activities.

This study further demonstrated that the fisheries use very specific sites within a limited number of streams for spawning and rearing. Spawning counts also proved to be a valuable tool in evaluating the relative contribution of tributary streams in the drainage. For example, the North and Middle Forks appear to provide equally in terms of bull trout and kokanee in Flathead Lake. Something we weren't sure of before. Howell Creek alone provides approximately 10 percent of the spawning in the North Fork. Loss of that tributary would be a significant impact on the river and lake fishery. An estimate 3,000 adult bull trout would be lost annually. This gains significance in light of the trophy size of bull trout, reaching up to 26 inches in length.

Following results of this inventory, fish managers realized the limited nature of the population and reduced the daily and possession limits in both Flathead Lake and Flathead River. Limits were also significantly reduced in the Canadian portion of the Flathead based on our study results.

Further assessment of resource development beyond the Cabin Creek mining proposal we observed were that timber sales were planned adjacent to 35 percent of the remaining spawning habitat. Negative impacts from development of a coal mine adjacent to Howell Creek would require a significant reduction in timber harvest on U.S. Forest Service lands along the North Fork to insure adequate conservation of the bull trout.

Senator BAUCUS. Pat, I noticed we only have 2 hours left, frankly, and lots more witnesses. Could you summarize in your own words and your entire statement will be a part of the record. I see you have already summarized part of it. Just do whatever you want as best you can. But I say this to warn subsequent witnesses, that we haven't a lot of time and to try to summarize. Why don't you go ahead.

Mr. GRAHAM. Another important part of the study was the valuation of the use and recreational value in the system. We demonstrated that there was a large amount of use and a recreational study was conducted which resulted in generating a value for Flathead Lake Basin recreation of $102 million per year. This includes both short- and long-term values of preservation. Maybe in summary, on the impacts of the Cabin Creek coal mine, the on-sight impacts, Howell Creek would be significant and we feel that, based on the studies we did and reviewing them for the Governor, that the habitat degradation would probably result from increased siltation, potential dewater-

ing from disturbances of the groundwater and that could have a very significant effect on the fisheries in the Flathead Basin.

A couple of outgrowths from our study, the Forest Service now has begun a study the last couple of years to look into the impacts of logging on bull trout spawning on the U.S. portion of the North Fork and another study is being conducted on the Swan River drainage looking at the cumulative impacts of micro-hydro projects. These micro-hydro projects aparently related to incentives to the Congress in the Public Utility Regulatory Policy Act are gaining a lot of momentum in the West and the Bonneville Power Administrative looked at these smaller projects and decided to fund a 2-year project to see what those cumulative impacts might be on micro-fisheries. The cumulative impacts, the development on salmon and steelhead in the Columbia Basin which are standard near the mine area, focus on what the cumulative impacts can do to our natural resource fisheries and I think with the studies and information generated as part of this Flathead Basin project, we have an opportunity to avoid some of those kinds of problems that were seen on the floor of the Columbia River Basin if we can use that data that's available.

Senator BAUCUS. Thank you. Hal.

STATEMENT OF HAROLD W. ROBBINS, CHIEF, AIR QUALITY BUREAU, MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

Mr. ROBBINS. My name is Hal Robbins, I'm with the Montana Department of Health and Air Quality Bureau. Before I begin, I do want to thank you and the committee for allowing us the opportunity to present this publicly. Sometimes you collect data and forget to share it with others. I also, if I might just for a second, I want to thank Ron Cooper and the committee for all their assistance and there are many people in the Air Quality Bureau and a lot of people that helped us pull this off and we're sitting here taking a lot of credit for what a lot of other people have done.

Basically there are four categories that we were involved in in the study. The first was defining the existing air quality in the Flathead Basin; the second was to ascertain the meteorology, the wind speeds and so forth in the area; another was to develop a simulation technique or a model we call it to predict existing impacts from sources; and the last thing and probably the most important was to apply this model or simulation technique to proposed new sources and new development. Of course the benefits of those four categories are rather immense for us and for the future of the Flathead in being able to apply that knowledge to proposed developments such as the Cabin Creek development to determine whether it will meet certain air quality criteria.

For the study itself, we monitored air pollution in 14 different locations throughout the valley. The types of air pollution that we measured were several things: One was called total suspected particulate, which is just what it says, particles suspended in the air; another is fine particulate, fine particulate being those which can enter the human lungs; course particulate, those are those particles which can

enter the upper respiratory tract but not down into the lungs; visibility; sulfates; and nitrates—nitrates is a byproduct basically of high temperature combustion; sulfates come from sulfur-related burning of things like coal and so forth.

The other part of the study was the meteorology. We measured wind speed and wind direction in various locations. We also measured wind speeds and directions at higher elevations through balloon launching including temperature profile to determine stability of the atmosphere, the breeze and so forth. We used an acoustic sounder, it's called, which also measures the atmospheric stability for the first 100 meters. These are important criteria for determining how pollution will disburse itself once emitted from a stack or other source. And really, the gathering of that data constitutes the major part of our efforts.

In retrospect probably the most important part of our study for our benefit and and I think for the future was the compilation of the meteorological data. We didn't realize when we started in retrospect and looking back and we find that the only data of any use to us—the nearest use is Spokane, Missoula, or Great Falls and clearly none of those cities would describe meteorological events of the Flathead Valley for use in air pollution purposes.

The most difficult part of the study was to do the third and fourth part and that was the simulation of the modeling techniques. In order to do that, first of all we had to make a compilation of all the emission sources, in other words the number of unpaved roads, paved roads, natural gas, fiber boilers, in addition to all the major industry. Once we had that we applied the meterological information to that to try to simulate the real world conditions. I can't begin to tell you the countless hours we spent on that particular project. I am pleased though to report that our best luck was in the North Fork area. We had the most difficult time with actually the Kalispell-Flathead area by virtue we suspect of just simply the immense number of sources to define.

We are continuing as a department to work on that simulation technique even though the study has ended. We are using our own time to try to refine that to even a better use for us.

In terms of Cabin Creek of course the Department has been interested for a long time in the Cabin Creek coal development and there are two basic items of interest to us. The first is that the ambient air quality standards be met, and secondly deals with Glacier National Park. As you know, Glacier National Park is protected under a specific legislation both State and Federal called the protection of significant deterioration or PSD for short. The PSD rules are fairly complicated. We could summarize it a little bit just simply by saying that Glacier Park is a class I area and by class I it means there is special protection both from a national and State prospective and what that further means is that there are standards applied to it so that only a very small amount of air pollution can be added to the park. It is deemed that almost any measurable amount of air pollution added to a class I area is considered significant.

Back in April of 1982, we, along with other State agencies, which were alluded to earlier did an assessment of the impacts of the Cabin Creek coal development on Glacier Park and the valley as a whole. In summary we believe that based on the 1982 analysis, that those stand-

ards that apply to Glaicer National Park will be exceeded. If that coal mine were developed in Montana, we would either have to deny the permit or insist on further control and technology to be applied so that that occurs.

Since April of 1982 we have redone the analysis with the updated meteorological versions that we have and in a nutshell we got the same conclusion, the numbers changed from places and locations but the same conclusions remained so we still remain concerned with the Cabin Creek development and its impact on Glacier Park. If you or anyone is willing to, I would be willing to provide specific details. There are numerous reports that have been published throughout. And I would be pleased to answer any questions that you have.

Senator BAUCUS. Thanks, Hal. On that last point, I would be interested in more detailed information to help document and nail down that point. But right now, can you tell us the degree to which, as near as you can tell at this point, Cabin Creek development would exceed the class I standards?

Mr. ROBBINS. The quantity?

Senator BAUCUS. Yes, the degree to which. Is it close or not close? As near as you can tell at this point.

Mr. ROBBINS. It's reasonably close. It's obtainable. Let me put it that way. It is obtainable. We could attain those standards and if the same source were built in Montana based on the information we had, we would insist on further control technology as our standard process even regardless of Glacier Park and I believe it's fair to say that if those standards were applied, I believe that they could probably meet the Glacier Park standards.

Senator BAUCUS. How difficult would it be for the company to meet those standards?

Mr. ROBBINS. In my opinion, it's not difficult because I believe it's certainly standard practice for U.S. mines to do the same.

Senator BAUCUS. So basically it would not be, in your judgment, a prohibitive capital investment at all.

Mr. ROBBINS. No, I don't believe it would be, no. If I might interrupt, you asked earlier about comparison of standards. Although I don't remember all of them off the top of my head, we did, in fact, look into that previously. There may be some confusion because Canada turns out with standards that are not written in the same language, as it were, that ours is. In a nutshell, their standards are more stringent than Federal standards but probably not as stringent as the State standards. But the kicker is, of course, that Canada does not have the prevention of significant deterioration and that's where the problem lies. They will meet the ambient air quality standards. The problem is meeting that special protection for Glacier Park.

Senator BAUCUS. When you get this information to me though, will you highlight that point as well?

Mr. ROBBINS. Yes, I will.

Senator BAUCUS. Thank you very much. Jack, I think your statement is terrific. It capitalizes, I think, a lot of the present and potential problems that face the basin and I think it's very good.

Could you just, in ordinary practical terms, explain what the significance would be between 50 mgs. of suspended particles limitations and 15? What effect would that be?

Dr. STANFORD. OK, the standard that we kind of develop through our research, and I use standard in quotes because—when the river begins to get rather milky colored, it contains about 10 mgs. per liter suspended solids. If it contains 50, it's approaching the brown color. Now the river, when it's in highest flow, the North Fork-Middle Fork combined, are carrying up to 1,000 milligrams per liter. So the difference between 50 and 15 is very substantial and in terms of the effects on the aquatic system, the logging effects and so on, the lower concentrations are generally made up of very fine particles that are transported a long way down the river system. There is a lot of material moving in the North Fork already. We're measuring accumulations right approaching the 17 grams of fine material deposited in a square meter in a day up there already. That's a spectrum of what those numbers mean. When the river turns milky colored, it's 10 to 15.

Senator BAUCUS. But apart from just the settling effect, milky versus brown, what other practical effects would there be?

Dr. STANFORD. When you are carrying a suspended solid load of 10, 15, or 20 grams per liter, that's enough to limit life penetration to the bottom. That's enough to cause significant accumulation of sediments in areas that normally would be free of sediments under low flow conditions and that's also an accumulation rate that will, upon a slight increase in discharge, cause a lot more material to be moved downstream than prior to the river carrying that kind of suspended solid load.

Senator BAUCUS. I don't mean to carry this too far but what effect then does that have on the fish and the system or the growth in the system?

Dr. STANFORD. Pat may want to respond to this too, but any time we start clogging the holes in the gravel, the inserts between the particles so that water cannot move efficiently through the gravel, the ability of the stream to harbor juvenile fish and eggs and so on then is limited. The base food chain items, the aquatic insects, are eliminated because they can't survive under those clogging conditions and a final point is that these sediments contain a large amount of phosphorus that the algae can grow upon and further clog the system which they normally would not have available to them. So it's actually fertilizing the system in a negative way if you will as well as clogging it.

Senator BAUCUS. Pat or Hal, did you want to comment?

Mr. ROBBINS. Another aspect of it might be the consideration that it will change the configuration of the river when you get an excess amount of sediment. It becomes wider and shallower, decreasing its capacity to harbor fish.

Senator BAUCUS. If you were called in to point recommendations, Jack, that is, the water quality monitoring has to be picked up and the Forest Service and the Park Service work together, has anyone approached the Park Service and the Forest Service to see what can be done?

Dr. STANFORD. We're working very closely with the Park Service right now. I have not worked with anyone yet in the Forest Service except to talke to Dick Paul up on the Glacier View district.

Senator BAUCUS. I would just ask you, I know you have heard my earlier question to the Governor and others, to document the differences

between Montana and British Columbia on the standards as you understand them in British Columbia and the Federal Government. If you could get that to me, I can pass that around.

Unfortunately time is of the essence here because I think they're at a very critical stage in British Columbia. That is, they'll be making a decision whether to grant stage II, making that decision in the next 3 weeks to who knows when, several months. Thank you, Jack. I appreciate it. Our next witnesses will be Bob Haraden, superintendent of Glacier Park and Dale Bosworth of the Forest Service.

Mr. HARADEN. Senator, I would like to bring Cliff Baringer to the stand with me.

Senator BAUCUS. OK, either you Bob, or Dale go ahead.

STATEMENT OF ROBERT C. HARADEN, SUPERINTENDENT, GLACIER NATIONAL PARK

Mr. HARADEN. Mr. Baringer as you know is the Parks' chief research biologist and was our representative to the steering committee. I asked him to join with me in the event that there are questions that might be his area of expertise.

Senator, I appreciate the opportunity to represent Glacier National Park before you today and the presentation I have will be a brief summary of the testimony delivered to you earlier.

The regional economy of northwestern Montana is largely dependent on the natural resource base, thus future growth is linked to the programs which sustain that base. It is therefore essential that both public agencies and the private sector cooperate in wise management of these resources for the future.

Glacier National Park is an important contributor to the economy and general health of the region. The park is managed as a protective sanctuary where natural processes are permitted to shape the native plants and animal communities. This management mandate is unique in that it assures the preservation of natural ecosystems. As such, recreational, esthetic, and educational benefits have been derived by many millions of visitors since the park was established in 1910.

At the same time, the wilderness haven and genetic reservoir have been provided for many species which have difficulty coexisting with people in other States.

An immensely important natural research information bank has been generated by the Flathead River Basin Environmental Impact Study. The final package has already been incorporated into the Park Natural Resource Information System. The aquatic studies were particularly important since they revealed the interdependency of streams and lakes. The bull trout story in its relationship to the Cabin Creek area in Flathead Valley and Glacier National Park is well known. The high quality of our atmospheric resource is often taken for granted by those of us who live and work in northwestern Montana. Yet, it is a vital resource essential to life itself that can be degraded, and that effects of deteriorating quality can spread to both terrestial and aquatic resources. Since Glacier Park is mandated by law to maintain an air shed of the highest quality, we are now implementing a monitoring program which incorporates results from the basin study.

The use of satellite imagery to map the distribution, amounts and types of vegetation cover was another important study goal for the basin. Glacier National Park and Flathead National Forest have entered into a cooperative agreement for the development of the satellite data base. Basin studies have helped us to focus attention on significant issues, not the least of which is a proposed open pit coal mine near the park boundary in southern British Columbia. This single activity holds greater potential for changing the park environment than any other influence identified to date.

Maintenance of clean air and water will be especially difficult, but extremely important should mining activities be initiated as proposed. We have been working through our Washington office with the U.S. State Department to express our concerns directly to the Canadian and Provincial governments.

Coal mining is not the only basin activity with potential for influencing the park environment. We remain concerned about a general expansion of human activity in areas near the park. This gradual erosion of the buffer zone is pushing the park toward the status as an ecological island. Wildlife with large home ranges such as grizzly bears may be the first to respond to boundary encroachment. Homesite development, timber removal and associated road building, energy exploration and recreation are among the more significant issues.

On September 27, 1974, Glacier National Park was established by UNESCO as a world biosphere reserve recognizing it as a special place on Earth to provide a permanent baseline record of the environment in its natural state. A scientific yardstick against which human impact on the surrounding landscape can be measured and evaluated.

It's purpose is also to provide for professional training and public education relating to major environmental issues, preservation of genetic integrity in the plant and animal community, while at the same time allowing for public use. The integrity of Glacier as a world biosphere reserve may be the key to the quality of life in northwestern Montana 50 to 100 years from now.

Waterton Lakes National Park was separately established as a biosphere reserve in 1979, one of only two in Canada. The superintendent of Waterton Lakes National Park and I have recommended these two parks be designated as one international biosphere reserve, the first in the world.

Senator, as we talk about differences between the United States and Canada, it seems to me that the Glacier and Waterton Parks having been established as the first international peace park in the world serves as a bridge of friendship between these two countries. Good information represents one of the few threats of continuity which management agencies have at their disposal. Managers must make decisions on the basis of the best information available at the time, often without needed data. We can make decisions on amazingly small amounts of good data but its absence often leads to planning based on emotion and opinions. With this in mind, it should be obvious that the basin studies have led us toward an enlightened atmosphere for making difficult decisions.

At the same time, we have much to learn and I would recommend that we now turn our attention to the terrestrial environment. Basin

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study financial resources did not permit much in the way of vegetation or wildlife studies; yet, these parts of the ecosystem are just as important as air or water and should be understood to a similar extent.

Finally, I see sunshine because we have improved our capability to manage through knowledge. Agencies are communicating with that knowledge, a sure sign of progress toward wise management. Thank you.

Senator BAUCUS. Thank you, Bob.

Dale.

STATEMENT OF DALE N. BOSWORTH, LAND MANAGEMENT PLANNING GROUP LEADER, NORTHERN REGION, U.S. FOREST SERVICE

Mr. BOSWORTH. I am Dale Bosworth, group leader of land management planning in the Forest Service's regional office in Missoula. I appreciate the opportunity to appear here today, representing John Emerson, Forest Supervisor of the Flathead National Forest, to speak as a technical witness about the Flathead River Basin Environmental Impact Study.

My statement will be divided into three areas that are pertinent to today's hearings. The first will be to establish the significant role of the national forest and Forest Service involvement in the Flathead Basin Environmental Impact Study; the second to discuss those facets of the study that have affected Forest Service decisions in the coordination and development of the Flathead National Forest land and resource management plan, and lastly I would like to identify some facts that we expect to be useful to the Flathead National Forest and the northern regional in the future.

First, the Forest Service's role in the study: A representative from the Flathead National Forest has been a member of the Flathead River Basin Study Steering Committee since its inception in 1978. I began my tenure with the steering committee in 1980, when I came to the Flathead National Forest as planning staff officer, responsible for the development and implementation of an integrated land and resource management plan for the Forest. I have been a member of the executive board of the steering committee since the fall of 1980.

Flathead National forestlands, which total 2.3 million acres, lie primarily within the Flathead River drainage. About 62 percent of the river basin is publicly owned, being under either Federal or State management.

The north, south and middle forks of the Flathead River are segments of the Flathead Wild and Scenic River System, managed by the Flathead National Forest in cooperation with Glacier National Park.

My second point is in regard to the facets of the study affecting Forest Service decisions. The Flathead River Basin Environmental Impact Study has supplemented the data collection and analysis efforts of the Flathead National Forest. The study has been cooperatively managed by a 15-member steering committee comprising Federal land managers, the State, local governments, the timber industry, environmental groups, and private citizens. The monthly meetings provided a forum for discussion of land use issues, including those of the Forest Service.

Limnology.—The study provided basic ecological information about the Flathead Lake and River system. A major result of this study was determining the relationship between the amount of sediment in the lake and the productivity of the lake. The study makes it possible to predict the impacts of sediment caused by man in his forest management activities. The agency will now be able to monitor the man-caused sediment and how it will affect the river and the lake. This ability will make better decisions possible regarding management of forested land in the river drainage.

Fisheries investigations.—The fisheries study provided data regarding cutthroat and bull trout distribution, movement, age and growth, habitat needs, and spawning and food habits. Of primary importance to the Forest Service was the identification of fish rearing habitat and the survey of spawning sites. Using these data, the Flathead National Forest personnel could evaluate the potential effects of management alternatives on the bull trout and cutthroat fisheries.

A monitoring program was developed for Coal Creek, a drainage with a high concentration of bull trout spawning sites in the North Fork of the Flathead River. This will serve as the model for the monitoring of fisheries habitat throughout the forest.

Flathead River riparian habitats.—The study inventories riparian areas along the banks of the North Fork and the main stream of the Flathead River. Although there is relatively little National Forest land in these riparian areas, the data obtained were used as the Flathead National Forest developed guidelines to apply to agency-managed riparian habitat. The study identified white-tailed deer use of the North Fork flood plain, thus providing data used in assessing the impacts of National Forest management on the white-tailed deer habitat.

Land use mapping.—The land use mapping project was a cooperative venture undertaken by eight resource management agencies, including the Forest Service, working in conjunction with the State of Montana and the National Aeronautic and Space Administration. In this project, the entire Flathead River Basin was classified in terms of vegetative cover.

Potential uses include monitoring change in vegetation related to human development, fire, insect and disease infestations, and natural succession. This will help in identifying fire hazard areas and essential habitat for various wildlife species, and in determining management decisions. For example, the mapping of vegetation will be used as part of mapping required in the forest plan for grizzly bear habitat.

Economic analyses.—The economic situation in Flathead Basin was assessed for the study. This provided the best available economic profile for the area and was used by the Flathead National Forest in the social and economic assessment required as a component of forest planning. Population projections in combination with analyses of several industries, including tourism, wood products, oil and gas, manufacturing and agriculture, depict an economic future of which the Forest Service is an integral part, a future of which the agency must prepare.

Data search.—The resource information that is relevant to the Flathead River Basin has been cataloged in a bibliographic format, with

more than 3,500 citations. These have been used by Forest Service personnel for literature searches relative to cultural resources fisheries, socio-economic analyses, and a variety of other programs.

My third point relates to facets that we expect to be useful in the future. The Flathead National Forest will be able to use the various baseline data obtained in the Flathead River Basin Environmental Impact Study in monitoring efforts. That is, the data and relationships developed in the study will be used to make projections as to what should happen as a result of forest management. Then as what actually happens is monitored, we can refine our ability to predict relationships. Thus we can continue to modify our land management decisions to bring the actual occurrences in line with the standards as expressed in our forest plan.

For example, one portion of the study has described historical sedimentation rates; this makes it easier to evaluate how land management activities (including those of the Forest Service) and the resultant sedimentation compares to past sedimentation. In another example, meterological data has been collected for 5 years, and a model has been developed providing a baseline and methodology for evaluating any proposed development in the Flathead Basin. Prior to this study, the most applicable meterological data was generated in Great Falls, Mont. (east of the Continental Divide), and in Spokane, Wash.

In addition, the Flathead National Forest land management planning team was able to draw on the information exchanged informally at steering committee meetings, as well as more formally through the project study reports, in developing the Flathead National Forest Plan.

The creation of the Flathead River Basin Commission, of which the Forest Service is a member, will provide support for and opportunities to continue the communication and coordination begun with the steering committee.

That completes my prepared statement.

Senator BAUCUS. Thank you both very much. One of the things that comes to my mind is a degree to which the information generated by the Flathead Basin Study would not otherwise be available to either the Park Service or the Forest Service and helping the Park Service and the Forest Service make future decisions, whether the Forest Service plans to log or not log a certain area and so forth or whatever decisions the Park Service might have. One of the unique qualities of the study is that it brought different groups together: Forest Service, Park Service, private citizens, the State of Montana, and the Flathead County Commissioners as well. I'm wondering, it's kind of a tough question to answer I suppose, but is this kind of a process necessary as a practical matter to help various entities talk to each other? I know you tried to do it as best you can, I know that. I know you have the world's best intentions, but I'm wondering as a practical matter, is this kind of a study necessary in order to make sure that's exactly what happens? The second question is, could you have developed the same innformation, the Forest Service or Park Service, anyway without the study? It's obvious that the Flathead Basin Study helps you, it helps everybody, but the question is, really that's a tough question but is it a waste of time or could you have developed this information anyway

or do we need this kind of interdisciplinary sort of approach to get the job done?

Mr. HARADEN. Well, I certainly do not think it was a waste of time. I think it was a tremendous effort. And while I would like to feel that we worked cooperatively with other agencies and our neighbors, I think this did focus ourselves on a single issue and did encourage us to develop a closer relationship not only with the Forest Service but other agencies who are involved in land management in the Flathead Basin.

I think if we would have been on our own, it would have been a long, long time before we would have gotten to this point without this kind of stuff.

Senator BAUCUS. You say if you were on your own it would have taken a long, long time. Is that because of a different perspective?

Mr. HARRADEN. No, I guess I was thinking more on the context of funding some of the studies that were made, if we had been on our own to fund some of those.

Senator BAUCUS. So what you're saying is that the Park Service doesn't have enough money to fund some of these same studies.

Mr. HARRADEN. Precisely.

Senator BAUCUS. So part of it is a question of budget.

Mr. HARRADEN. Yes.

Senator BAUCUS. Would the same be true of the Forest Service?

Mr. BOSWORTH. Yes, I think so. The other part of your question in terms of, would we have done some of those things anyway, I would say that an advantage of having somebody there from the Forest Service and Park Service and other agencies on the steering committee was that we were able to participate in the identification of studies that were needed and in some cases we already had information that had been collected in the Forest Service such as some social information and so the steering committee then elected not to spend money on that because that was already available. So the way that the whole steering committee worked I think was very favorable in terms of not duplicating expenditure of dollars and I also feel it was a very well done study and very useful.

Senator BAUCUS. I was just curious, Dale, your reaction to Jack Stanford—he said that in his view, he listed three problems that affect the system, one is the natural increased erosion occurring downstream in the larger tributaries due to loss of evapotranspiration from forestry canopy. I'm just wondering if you agree with that.

Mr. BOSWORTH. I can't disagree with Jack Stanford.

Senaotr BAUCUS. Why can't you?

Mr. BOSWORTH. Not on those points. I'm really not qualified to.

Senator BAUCUS. OK.

That just seemed interesting when he made that point. I was just wondering if the Forest Service agreed or disagreed with that, what reaction the Forest Service might have to that.

I've no other questions. I want to thank you very much for coming, Bob and Dale. I know the cooperation and also the efforts established with the Commission and with the State will continue; $50,000 isn't going to go very far in developing what is needed. I hope the State of Montana and perhaps even some Federal dollars will help main-

tain this and help the Park Service as well as the Forest Service in the future. Thank you very much.

OK, our next witness is the Flathead County Commissioners—all of them represented by Henry Oldenburg.

STATEMENT OF HENRY OLDENBERG, CHAIRMAN, BOARD OF FLATHEAD COUNTY COMMISSIONERS

Commissioner OLDENBURG. Senator Baucus, I am Henry Oldenburg, chairman of the Flathead County Commissioners. In terms of heritage, my grandfather homesteaded on the Flathead River a long time before the turn of the century. I love this valley and it was an honor and privilege to serve for 2½ years on the steering committee for the Flathead River Basin Environmental Impact Study. My prepared statement:

Dear Mr. Chairman and Senator Baucus, thank you for this opportunity to appear before your Subcommittee on Toxic Substances and Environmental Oversight on behalf of the citizens of Flathead County. I also want to thank you for calling your subcommittee hearing in Kalispell in order to permit our citizens to have their local voices heard in a convenient and familiar location.

Total involvement by the people of the Flathead Basin will be the only guarantee that our high quality of life and pristine natural resources will be protected for present and future generations. The newly formed Flathead Basin Commission will exercise a key responsibility for encouraging wise land-use management decisions within the basin.

The challenge of resource development in the Flathead Basin is to protect our environment while simultaneously providing the impetus to an improved economic climate. The two goals are not in conflict.

Central to protection of our environmental heritage, and especially the national treasures we possess in Flathead Lake and Glacier National Park, is the continuation of critical long-term monitoring programs in this valley.

Building on the achievements of the Flathead River Basin Environmental Impact Study will provide ongoing direction for wise resource management decisions. This, in turn, will prevent adverse water quality impacts from occurring.

Most crucial in the near future for the Flathead drainage are those decisions made by our neighbor to the north, British Columbia, concerning the proposed Cabin Creek coal mine.

It is clearly within the technological capacity of scientists and engineers today to prevent any deterioration—both immediate and long term—in the quality of Flathead waters and their integrated ecosystems. Equally clear is the acceptance of mining activity at Cabin Creek by the people of the Flathead if no pollution of the Flathead derives therefrom.

Threat of that pollution prompted the initiation of the Flathead River Basin Environmental Impact Study. Our commitment to avoiding that danger remains undiminished. But, in all honesty and candor, we of the Flathead can ask no more of our British Columbian neighbors than we are willing to undertake ourselves. The many small

decisions made locally and in Helena combine to either enhance or degrade our quality of life. In our own hands—and no others—lies the protection of our economic and environmental future.

A special thanks must be given to you, Senator Baucus, for your initiation of and support for the Flathead River Basin Environmental Impact Study in the U.S. Congress. To Gov. Ted Schwinden and State Senator Jean Turnage also goes our appreciation and thanks for securing the successful passage of the Flathead Basin Commission in the Montana Legislature. Thank you.

Senator BAUCUS. Thank you very much, Henry. You make several, I think, excellent points. One is that we asked British Columbia to adhere to Montana environmental standards. Certainly we here in Montana have to do what we can to protect our own environment. As I understand, some of the suggestions of the basin study included communities like Evergreen; what are other communities doing to help preserve the qualities of the lakes. I know that puts you in a tough position as a county commissioner.

Commissioner OLDENBURG. It takes money but we have to make the commitment.

Senator BAUCUS. All of us have to show the Canadians that we're doing our part, that we're living up to the same standards we're asking them to comply with. It's an excellent point. Obviously the proof is in the pudding. I mean, either we do it or we don't. But we could say we're going to do it but until we do do it, it's pretty hard for us to ask the British Columbians to obtain higher standards.

I'm curious, since you're on both the steering committee and the chairman of the board of county commissioners, Henry, do you have any suggestions on how to frame any future basin studies based upon your experience? I ask this because one of the main points or purposes of the hearing here is to establish a record so that in future dates whenever Congress is faced with a decision of whether or not to have a regionwide study similar to the Flathead study here, they can look at the record that is established here today and perhaps learn from it in framing the kind of future studies.

Commissioner OLDENBURG. First of all, if I could preface my response by saying, we in the Flathead owe a very real appreciation, a debt of gratitude to Ron Cooper who is now on your staff for all of the work he has done in helping us.

Senator BAUCUS. I do too.

Commissioner OLDENBURG. I came into the middle of this. The study had to occur, we had no other resources. Without that study we would be at a loss. There were no resources I think in the State or Federal agency or in the whole Government to meet the challenge that was posed at the time by the proposed Cabin Creek coal mine and pollution. I think that in other areas, this might not be true but certainly it's a first time and it offers a model that could be utilized and I think utilized very successfully as it was here.

Senator BAUCUS. You make another point here that I think is very good. That is, resource development and maintained environment and protecting the environment in this area are not in conflict. That is, they're not inconsistent. I think too often too many people tend to say that they are but more often that is not the case.

Commissioner OLDENBURG. If there is a commitent for protection as well as development.

Senator BAUCUS. Thank you, Henry, very much.

Commissioner OLDENBURG. Thank you, Senator.

Senator BAUCUS. OK, next we have a Canadian panel which I wish were British Columbian officials. Mr. Carmen Purdy could not make it. Andy Russell, who is going to be in his place is with us as well as Bob Fontana who is from the Fernie Rod and Gun Club.

Mr. FONTANA. Could I ask that George Wilson, our industrial development director join us in the panel?

Senator BAUCUS. Certainly. OK, gentlemen, whoever wants to go first.

STATEMENT OF ANDY RUSSELL, PRESIDENT, BRITISH COLUMBIA WILDLIFE FEDERATION

Mr. RUSSELL. I'm Andy Russell. Thank you, Senator, for the opportunity to speak here. I'm going to do some very heavy editing on what I had written because I feel that the time is limited and I shall leave you a copy of this when I go.

Senator BAUCUS. Your whole statement is going to be in the record and that goes for anyone else too, so rest assured.

Mr. RUSSELL. Fine. I have been listening to your question, sir, in respect to the ways and means of gaining British Columbia's government ministers' attention on the points of vital quality control in respect to the mining development on the Flathead. And having had some experience with these gentlemen in the past, why I should suggest, sir, that to penetrate the sickness of the bone of ignorance and what boils down to indifference, that you're going to have to employ what I would term "2-by-4 diplomacy" and I suggest you pick the 2 by 4 from a green pine.

I don't know how successful we can be on this Commission in short term but I think they're going to have to be hit with the importance of it and the distances involved. It's further than the Flathead—much further than the Flathead.

I have it on pretty good authority that stage III is going to be a permit request for a steam generating system built right there on Flathead. Now I have no way of proving this. I'm just suggesting the possibility. I do know that if it happens, that the pollution that you're going to suffer is not going to be just from a strip mine but it's also going to be very, very strongly from the air, as strong as strip mining is of the water. Also air quality will be involved—anyhow, it will be much heavier and we know from our experience in Alberta what the dangers are of that.

Now I don't know how anybody could possibly compare the damages that can occur in different parts of the international rivers that is going to occur throughout the 49th parallel. I think a wild river such as the Flathead is probably so valuable it's probably beyond figuring. But nevertheless there is a tradeoff here and it seems to me, the Americans have been backed off on Skagett River out on the coast or the Washington damage, that you have a very good talking point politically with the British Columbia officials in respect to their consider-

ation of the Flathead. I only suggest this because no doubt you're aware of it. And also I think that this thing can be carried even further east to the area on the Red River known to us as the garrison.

Our acid rain thing—where our mutual problem is, we have the problem of acid rain which is enormous and we have gone to you, jumped up and down and raised a good bit of hell in Washington one way and another to try to get something done about it but quite frankly we're far from green ourselves and we're doing some but we're not doing it near as fast as we should and cleaning up our problems in our own backyards and in our particular contributions to acid rain. I think that this could be used with respect to the problems here on the Flathead River. We have got some trading to do it seems to me and let's not forget it.

Now I don't detract from the values of data and scientific research in any way whatsoever but unfortunately throughout the world, not just here in Canada—or here in the United States or in our country, we have been using scientific research as a break to real honest-to-goodness cleanup of our problems. We have got truckloads of data in Canada and I suspect you have got truckloads of it here. Now what good does it do us if we don't use it in a way that is constructive. We put it on the shelf and forget it.

Now I suggest to you, sir, that if you're wondering or if you're concerned about what is going to happen to the cutthroat and the bull trout of the Flathead River, that you send somebody up to Fernie or to Victoria, wherever they keep the records, and examine the minutes of the public hearings that were held before they put the strip mines on the river at the head of the Elk and see the assurances that were given by the Government officials that you're dealing with and other people involved with company's industrial lists in respect to what they were going to do to assure the people of Fernie that the river was going to be kept as it was or at least as close as possible and then take a look at the river and then ask anybody who knows the Elk what happened to the fresh water fish. These are gentlemen I think that can tell you what happened to that. I think you will learn something. Very, very interesting.

I hate to suggest that the veracity of these people is in question. I am just going to suggest to you that so far they haven't given a darn. And they got a lot of proving to do before they will convince anybody that they really mean what they say sometimes.

Sir, I'm going to leave a copy of this for you and I thank you for the opportunity to speak.

Senator BAUCUS. Thank you.

STATEMENT OF BOB FONTANA, DIRECTOR, FERNIE ROD AND GUN CLUB

Mr. FONTANA. Before I read the brief summary that I have here, Senator Baucus, I would like to thank you and the subcommittee for inviting me down as a spokesman for the East Kootenay Wildlife Association, the Fernie Rod and Gun Club, and the B.C. Wildlife Federation, a director in all three of those organizations. And I would like to apologize on behalf of Carmen Purdy for his inability to attend

today. He had some proceedings to attend to with his own job even though oftentimes we would like to do things that don't involve our job and we can get away to do things like this.

The short summary I will read outlines the position of the Fernie Rod and Gun Club, the East Kootenay Wildlife Association, and the B.C. Wildlife Federation concerning the development of a coal mine by Sage Creek Coal Limited, in the Flathead Valley of British Columbia. This brief has been prepared by the executives of these organizations with the best interest of the people they represent, the British Columbia sportsman, outdoorsman, conservationist, at heart. This position is not of a highly technical nature but has been formulated through experience with extensive coal development in the southeastern region of British Columbia. There has also been an attempt to avoid repetitious testimony that may have already been covered by technical groups such as the Flathead Basin study group. The statements prepared by British Columbia conservation organizations parallels their policy regarding industrial development. For the purpose of this presentation, the three organizations represented herein will be referred to collectively as the British Columbia Wildlife Federation.

As conservation organizations we have not taken a hard line ecological stance where we are vehemently opposed to every industrial development that comes on stream, especially those that may provide a general, overall benefit for mankind. Our philosophical stance could best be summarized with this statement: "We are not blindly opposed to progress, we are opposed to blind progress." In this instance it is the opinion of the B.C.W.F. that the development of Sage Creek Coal Limited's properties in the Flathead would be of little overall benefit to British Columbians at this time. The loss of invaluable outdoor facilities—the North Fork wilderness—in a region of this Province where outdoor recreation is the No. 1 leisure time pursuit amongst the population (southeastern coal block recreation study, ministry of environment 1982) for short-term economic gains, that at best can be described as marginal, is not acceptable. This brief attempts, in point form, to outline some of the losses in terms of quality of life for the residents of British Columbia and Montana. It also attempts to portray the losses in terms of the wilderness resource, an intangible quality, if this development proceeds.

No. 1. Wild and Scenic Rivers Legislation: The B.C.W.F. has long supported any proposal for rivers perceived as possession uniquely wild and scenic qualities, to be legislated as such and preserved for future generations to enjoy. The development of an open pit coal mine on the North Fork of the Flathead, a river that has already acquired wild and scenic legislation in Montana, almost certainly preempts the criteria for such legislation on the British Columbia side of the border. It is imperative that international rivers be handled consistently on both sides of the border in terms of any such declaration.

No. 2. Wilderness Integrity of the Flathead: The North Fork of the Flathead remains as the last relatively undeveloped major wilderness valleys in southeastern British Columbia. The fact that this region is bordered on two sides by national parks (Waterton Glacier International Peace Park) demonstrates its significance as a wilderness entity. To promote development in the British Columbia section of this region would threaten the future of the Waterton glacier system.

No. 3. The Fisheries Resource: The Flathead Basin study has recognized and identified the importance of Howell Creek as significant spawning and rearing habitat for both westslope cutthroat trout and dolly varden (bull) trout. Response of the State of Montana to Sage Creek's application from Ted Schwinden, Governor, to Bill Bennett, premier. This habitat represents the most concentrated bull trout spawning area in the Flathead River system. This habitat is located in that part of Howell Creek that runs directly through the proposed mine site. It is an obvious fact that unless the mine plans are 100 percent infallible that this critical habitat is in jeopardy. A great deal of concern has already been expressed about the ability of Sage Creek's drainage system to adequately handle the sediment load.

Another point to consider in reference to fisheries, that particularly affects the British Columbians is that the dolly varden (bull) trout fishery in the North Fork represents a major trophy fishery for both resident and nonresident anglers during the migratory run in mid and late summer. The early summer migration run of westslope cutthroat trout, locally known as flats, also provides numerous recreation hours for sport fishermen. The development of this project would undoubtedly adversely affect this extensive fishery internationally.

No. 4. The Wildlife Resource: Although many species of wildlife inhabit the mine site area and the regions that will be affected by off-site development, the greatest effect could be on the grizzly bear population. The North Fork of the Flathead has been determined to maintain the highest concentration of mountain grizzlies known of in North America. (Brue McLelland, Border Grizzly project.) The value of this resource in terms of this drainage is therefore made obvious.

Sage Creek Coal Limited has admitted (Stage II Environmental Assessment) that the mine development will displace as many as 8 to 16 grizzly bears. They have also suggested that mining camps, with their garbage et cetera, may have an unknown effect on bear populations in the region. Grizzly bears are wilderness habitat dependent. Elimination of wilderness habitat and encroachment by man of the same not only displaces grizzly bears it eliminates them.

This threat to the grizzly population is also significant in light of the fact that grizzlies are a threatened species in the lower 48 States and this particular population ranges internationally. (Bruce McLelland, Border Grizzly project.) Any significant reduction in bear habitat and therefore bear populations as a result of this mine would be an atrocity. The grizzly bear has been used as a detailed example of the effects on the wildlife resource because of the quality and significance of data prepared by the Border Grizzly project and the great bear's dependence on a wilderness land base. Although other species inhabit the mine site the bears are most negatively affected.

No. 5. The Harvey Lodgepole Haul Road: The impacts on wildlife and wilderness do not remain mine site specific. Off-site development has as much, if not more, impact on the Flathead Wilderness as the mine site itself. The continual stream of mine traffic, which includes a minimum of one haul truck every 7 minutes (Stage II Assessment) will become a devastating concern for wildlife populations and recreationists. It is the opinion of the B.C.W.F. that Sage Creek Coal Limited has not addressed all of the potential for problem that traffic on this haul road may create.

The Harvey Lodgepole area contains two major migration routes for all species of large ungulates found in the region. These migration routes will undoubtedly be affected by a busy haul road. There are statements in the Stage II Assessment that indicate that mountain goat and mountain sheep will not be affected by the haul road traffic, even though their spring, summer and winter habitat is found at any given time on either side of the haul road. This type of data base inadequacy significantly reflects on the need for a more detailed study of the project and an official public hearing.

Recreationists will effectively be eliminated from access to the drainage as the intense coal truck traffic alone suggests. The aesthetic value of any recreation that has to compete with major industrial traffic has to be questioned. The No. 1 recreational pursuit (Southeastern Coal Block Recreation Study, Ministry of Environment, 1982) observing wildlife, would thereby be eliminated in the Flathead.

The sixth point and the last one I'm going to make is human encroachment. One of the observed problems in all of the mining operations that have been developed in the East Kootenay region is the effect of a large human work force on wildlife and wilderness resources. Tremendous pressure is exerted on both fish and wildlife populations as well as to the environment, as typically 600 to 1,000 workers become concentrated users of an available, though fragile, resource. The effects of this influx on encroachment are very difficult to gage as the percentage increase in use is often mind boggling.

These few areas of concern have been addressed because of historical evidence from the mines in existence in the southeastern coal block in British Columbia. All of the problems briefly summarized herein have become very real phenomena in our experience with open pit mines in the southeast. These problems are extremely difficult to assess in a report of the Stage II nature.

The state of the art in coal mine technology as outlined in Sage Creek's Stage II Assessment is not, in the opinion of the B.C.W.F., adequate to proceed with the mining proposal. The opposition is not intended as a personal attack on the principles of the parent company, but rather is intended as an opposition to any projects of this nature for the area in question.

There are five open pit coal mining operations in production within a 100-square-mile radius in the Elk Valley region of British Columbia at present. There are numerous coal deposits in the same area as the existing mines. To develop a new project in a distinctly separate segment of this region, before the coal deposits of the Elk Valley has been exhausted, is entirely unreasonable. The losses in terms of wildlife, fisheries, wilderness and recreation; which spell quality of life for both British Columbians and Montanans; cannot be recouped by the economic gains that are assuredly marginal.

The other point of importance in this matter is that there are no downstream benefits to be derived at all. In light of the recent developments in the Skagit Valley and our very positive relationship with our U.S. neighbors, it would be extremely selfish for the government of this Province to give Stage II approval to this mine. The British Columbia Wildlife Federation goes on record as being strongly opposed to the granting of Stage II approval for a coal mine in the Flat-

head region of British Columbia. And I would just like to ask a question as a final point to this summary. Were the representatives from Sage Creek invited to this hearing?

Senator BAUCUS. Yes, they were.

Mr. FONTANA. Have any of them made a presentation?

Senator BAUCUS. No, they haven't.

Mr. FONTANA. Thank you very much.

Senator BAUCUS. Thank you very much, Bob. We did invite representatives from the company to come but they chose not to.

Mr. FONTANA. That's understandable.

[An attachment to Mr. Fontana's statement follows:]

THE POSITION
OF THE FERNIE ROD AND GUN CLUB
ON SAGE CREEK COAL

The Fernie Rod and Gun Club is strongly opposed to the proposed Sage Creek coal mine in the Flathead. This position summary outlines and priorizes the Club's reasons for opposition.

1. *The Flathead remains as the last major undeveloped 'wilderness' valley in the East Kootenay.*

2. *The Flathead River is an international river that has been declared a wild and scenic river by the U.S. Congress.*

3. *The Flathead is bordered on two sides by national parks. (An international peace park.)*

4. *The Flathead as such provides unequaled recreational opportunity for numerous sportsmen.*

5. *The Flathead provides wildlife habitat for all major species of big game found in the East Kootenay, including grizzly bear, mountain sheep and mountain goat.*

6. *The Harvey Lodgepole Creek haul road disrupts two major migration routes for all major species of big game found in the East Kootenay.*

7. *The Flathead provides fragile fisheries habitat for major game fish, including dolly varden, cutthroat and whitefish*

8. *The Flathead (North Fork) provides one of North America's major fresh water fisheries, Flathead lake, with spawning grounds for the above mentioned fish.*

9. *The environmental impact of both the mountain pine and spruce beetles have had a devasting effect or the Flathead. No more disruption could be withstood.*

THE FLATHEAD MUST REMAIN A WILDERNESS.

WE REQUEST A MORATORIUM ON DEVELOPMENT IN THIS VALLEY. NOW!

The Executive
Fernie Rod & Gun Club

FERNIE & DISTRICT ROD & GUN CLUB

P. O. BOX 1448,
FERNIE, B.C.
V0B 1M0

Senator BAUCUS. I would like to dwell for a short period of time, Andy, on a point that you made about the 2 by 4. I agree with you. We are today just bombarded with so many different things happening and fancy communications and so forth, all that is written and all the TV and radio. Everybody tends to get a little overloaded at times and to get attention sometimes you need a 2 by 4. Or to state it differently, a squeeky wheel sometimes gets the grease. It was the 2 by 4 approach I was trying to use when I went up there to talk to the Ministers. The whole tone I adopted was one to be very fair and somber and direct and tell them how concerned we are. And for that reason too, several years earlier I went to Toronto to talk to the Vice President, Mr. Adler and I pointed out to them that, much to the consternation of the North Dakota Senator that opposed the Garrison diversion, I think that North Dakota does deserve a water project, but not this water project, No. 1, one of this magnitude which in many respects is a boondoggle anyway, the cost effectiveness is not good at all, but second, which is causing very significant problems for the Canadians. I also pointed out to British Columbia Ministers my support for trying to stop acid rain in the United States. That is more strict emission control standards that seem to be causing acid rain that very much upsets Canadians and it should. And the Skagitt situation, should indicate to British Columbia officials that we're trying to live up to our end of the bargain even though the United States is going on with the Garrison diversion and even though we're not doing what we should be doing yet with acid rain.

Nevertheless, I'm at least from the Montana point of view trying to show them we're trying to live up to our end of the bargain. I'm just curious though what other suggestions you would have—what other 2 by 4's come to mind so we can be more effective based upon your experience?

Mr. RUSSELL. Senator, if you have gone through the process that you have gone through to these gentlemen, you have gone a long ways. But nevertheless, it seems to me that to be effective, to really gain their attention, which is the crux of the matter, it's just—it's going to take some hard, tough updealing and you have gotten—there is one thing, no neighbor, I don't care individually, statewide, provincially or internationally, we'll think of deliberately driving a truck across the border and dumping a bunch of garbage in somebody else's yard. But yet unofficially we do it every day. And in this particular case, it seems to me that we haven't gotten an ounce of excuse because we know what will happen, we blessed well know. It seems to me beyond comprehension that the problems of British Columbia would consider it for a minute because this is a—what amounts to a national monument. We are sharing a biosphere, an international biosphere situation with the parks and we have gone a long ways but it seems to me it's very difficult to try to rationalize what we're even talking about here. It seems like, you know, I came here as an uninvited guest more or less and in fact, I honestly thought, what am I doing here, I'm wasting my time. Why should we have to talk about something that is so damn obvious to anybody. It would seem to anybody with nil intelligence—why would you consider spoiling a river. You have designated this as a national monument. Now national monuments go beyond the

jurisdiction or designation of governmental halls of administration and our lakes in Ontario and Quebec are more or less set up as national monuments just as important because if you kill one of them, it's a thousand years before anything can happen there that is worth looking at. I know of lakes down there, sir, that you don't even dare to swim in because it will take your hide off.

Senator BAUCUS. I appreciate what you're saying. I made the same points as you suggested, that is, the importance of Glacier National Park as a national monument. Also I mentioned to them that this will probably go to the International Joint Commission if they proceed and I think frankly, we will find a way to find that 2 by 4 because the issue is just so important.

Mr. RUSSELL. It's of vital importance.

Senator BAUCUS. I think they have delayed the decision because they are aware of our concerns in Montana as well as your concerns in British Columbia. The question is, what other kinds of 2 by 4's we can find, not only to get their attention, but to be effective. That's the main thing.

You mentioned the possible thermal plants down the line. I was curious about that because when I was up there talking to them, they were saying they were trying to sell a lot of their excess hydropower and if they're trying to sell hydro and they have an excess of hydropower, I was just wondering why they would want to build a thermal plant.

Mr. RUSSELL. By the same token that they're building another coal plant. They have more coal now than they know what to do with. It's a matter of local politics. You have it down here too. It's human nature.

Senator BAUCUS. OK. I'm glad you came, Andy. Thank you very much.

Mr. RUSSELL. Thank you.

Senator BAUCUS. OK, the final panel is Jim Cummings and Jon Heberling. They are members of the Flathead Coalition. OK, Jim or Jon, whoever wants to go.

STATEMENT OF JAMES A. CUMMINGS, MEMBER, FLATHEAD COALITION

Mr. CUMMINGS. I guess I'll start off because I'm a little bit older than Jon. We appreciate the chance to come here today fortunately to hear all of this real fine testimony that has been given. Obviously everybody that has testified here today has been very thoroughly committed to the process that this Steering Committee and the Flathead Basin Committee have been carrying on for a long 5 years and that's a long time in any kind of an organization.

The Flathead Coalition got started about 1975, early in 1975 when the first press reports of the impending coal mining were coming before our attention. We have been at it fairly steadily ever since. Over the years, our composition has changed somewhat. By and large we carry still the same member organizations who were in the initial coalition. Some have dropped away but for the most part those that were the early and active member organizations are still continuing with the project.

One thing that questioning today indicated that I think we should make our position clear on is a matter of whether or not we could agree

to development if all reasonable precautions were taken against pollution. Since this study has been completed, it becomes pretty obvious that no measures, whatever they are going to be, can be taken which will give us anywhere near a guarantee of zero pollution or even close to zero pollution and it's now the position of the Flathead Coalition that we are opposed to the mine along Cabin Creek.

I have a lengthy paper which I have furnished to your committee. Without going into the whole paper, I will spend the balance of my time here talking to some degree more or less summarizing the points made in the second half of it. The second half of my paper is addressed to a problem which we discovered very early and that is, that the International Joint Commission in the 1909 boundary treaty, while they sound good, certainly have lots of deficiencies and as good as the IJC has been over the years in identifying and dealing with certain problems, it has also been ineffective on others. It has been bypassed by the two governments, one at one time and one at another and as much as we would like to think of this as being an advanced step toward management of international waters, the fact of the matter is that it was a giant step in 1909 and to appraise the International Joint Commission now is like appraising the horse cavalry. Today the other nations of the world have stepped forward, have developed their own systems of dealing with these border water problems and pollution problems and in many respects have gone considerably beyond this. The treaty which comes to mind immediately is the Nordic Treaty between Norway, Sweden, and Denmark too I believe, the Rhine River Treaty involving France, Germany, Luxembourg, and the Netherlands, and I understand that the Indus Treaty between Pakistan and India, two warring neighbors if ever there were, is likewise a considerable step beyond where we have reached with the Boundary Waters Treaty.

On the south boundary of the United States we have the International Boundary and Waters Commission which deals along the Mexican border and deals somewhat more effectively in certain respects than our IJC does on the northern boundary recently. The American Bar Association and Canadian Bar Association, their sections on international law have developed and proposed a draft treaty for the settlement of international disputes between Canada and the United States. Now certainly nobody can call this a radical document by a group of activists. These are two conservative organizations and I'm sure that there would be nothing found more reasonable than what this treaty is. Thanks to you and your office, I have obtained a copy of it and I'm sure it's rather unknown and I think this is a great shame because we do need a certain amount of tinkering and improvement in the IJC process. And I wanted to mention some of these improvements that should be considered by Congress.

I think the mere process of just simply holding hearings on them or announcing your intentions to study the process of the IJC would do much toward seeing the two countries working together better on their problem. As a glaring example of one thing that is wrong with the IJD, over the past couple of years at one time or another the entire American section—the three American Commissioners, the positions were not filled. At the same time, I think two out of the three of the Canadian positions were not filled and if an organization is going to have any continuity and any buildup of experience, it has to keep its staff building up and learning from one another and taking care of

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problems as they come along. These kinds of gaps which I'm sure are a matter of breakdown of political processes somewhere will contribute much to undoing much of the good that that organization is able to do.

With the idea that the IJC can fruitfully be studied and improved, I would suggest one glaring deficiency of the IJC as presently functioning which is that it does not have a watchdog function. The IJC Commissioners themselves commenting on the deficiencies of the organization have been reluctant to come out and say that it meets a watchdog function. I can understand that because if the IJC were to take on this function with its present budget and its present organization and staff, I'm sure it would find itself overwhelmed by the work. However, the watchdog's function done by somebody is going to be an immense savings to the taxpayer in the long run and I think the experience with Sage Creek Coal with its more or less secret applications and permits to go ahead and explore the possibilities of development point up well the failure of not having a watchdog agency.

Now maybe what is necessary is an agency entirely separate and apart from IJC but the function should be carried on. There should be an institution which routinely goes to each of the various concerned Provincial and State governments, the National Government and the numerous agencies which will be dealing with many, many different problems and find out what they are about to do and what they see as coming in the near future.

A third problem that certainly needs to be considered is the lack of a thorough commitment on the part of the two governments, mainly on the part of the United States, to make the IJC function. I think that we can look at the experience on the Great Lakes Water Agreement and this is pointed up rather sharply by a 1982 study made by the General Accounting Office which indicated that out of 17 reports and requests made by the IJC to the United States, asking in the first place—on the one hand for certain information and on the other hand asking about the followup activities to carry out the Great Lakes Water Quality Commissions recommendations, out of 17, and 3 results in a response. Now this is a terrible piece of management for the—measurement for the management of a severe water problem such as was in the Great Lakes at that time.

Another feature which has been suggested and seems to be I think an important step toward effectiveness would be that there should be a moratorium on development as soon as the problem is identified in the near future. As it is now, we have a project which is getting targeted such as the Garrison diversion project while the IJC is in the process of studying the problem. The construction continues on full blast. Congress, in the case of the Garrison diversion, was not wholly without blame as it continued to fund the construction year after year. One provision of the Boundary Waters Treaty is article X which provides for arbitration of boundary water problems.

It's noteworthy I think that in the 70 years of the treaty, that that has never been used, not once. The reason it hasn't been used is that the arbitration process cannot be used unless both governments agree that they will submit the matter to arbitration. Now some of the modern treaties, the arbitration of disputes is compulsory upon the application by one party or the other. Those sorts of provisions ought to be considered by Congress to see whether or not it should be placed

in the Boundary Waters Treaty. The provision of the Boundary Waters Treaty that has been allowed to fall into disuse are the provisions of indemnification of persons who will suffer the fallout from a development across the border, the people who will have their property damaged or themselves.

In the past we have consoled ourselves by thinking that we have adjusted the benefits to flow out of a certain project in such a way that Canada gets 50 percent, the United States gets 50 percent. This is fine for Canada and the United States but it's not fine for the poor devil who gets his land washed away or destroyed in value by reason of serious pollution along the water boundary with his property.

A final major point to make with regard to this is that there should be a permanent staff with the IJC of sufficient size that they can continue on with studies as a permanent entity and not waiting for a crisis to come along at which time a task force will be assembled as it is now and a crash program will be developed and since we are in a crash program down here, it would have been perhaps cheaper and certainly more effective had we been carrying on this study over a period decades in the past rather than over the 5 years that we have had it.

One final mention that I want to make here is that the International Law of River Management and Boundary Waters problems of this general sort has changed greatly over the last 7 or 8 years. Back in 1975 when we got started, it was something that was not very well discussed in the scholarly literature. It was not considered as being anything more than simply a matter of two governments talking one to the other. In those 7½ years, we have seen legislation on the part of the U.S. Congress, we have seen treaties, we have seen much in the way of scholarly development of international law which indicates that now at the present time individual citizens or citizen organizations have a right of statute in order to protect their property. And if the IJC or the two foreign affairs—or the two Governments fail to do so, they themselves can go to court and have a good chance of succeeding, not only against the firm which may be doing the developing and causing the problems but against the government which is allowing them to do so. There are a great many other ways in which the IJC process can be improved somewhat. Those are set out in my paper that I have filed with you. I hope that the subcommittee here will use its influence to urge such a hearing upon Congress and I think it will be effective. Thank you.

Senator BAUCUS. Thank you, Jim, I appreciate it very much. Jon.

STATEMENT OF JON L. HEBERLING, MEMBER, FLATHEAD COALITION

Mr. HEBERLING. My name is Jon Heberling. I have been one of the attorneys for the Flathead Coalition since 1976. I would like to introduce Mr. Neil Blum who is our chairman for 1983. We would like to express our appreciation to you, Senator Baucus, for obtaining the funds for the Flathead study and for your effective efforts of protecting Glacier Park and the Flathead drainage and we note that Senator Baucus has also been sensitive to the needs of the Canadian side, as he has introduced the bill to control acid rain pollution.

At this time I would like to submit copies of 5,600 petition signatures which have been obtained largely at the Polebridge Store. We have another 600 which we will Xerox and submit during the time available, the 2 weeks after this hearing, when the record is still open. The petition signatures have been submitted regularly to the Ministers of Environment for British Columbia and copies have also been sent to the Minister of Environment for Canada. It's basically a petition requesting zero pollution across the border and that the mine not be built until this can be proven to be so. I've submitted written comments and I will just summarize them here.

We would also like to express our gratitude to Governor Schwinden for having obtained for Montana the opportunity to enter formal comments into the British Columbia environmental process. These Montana comments have conclusively demonstrated that this mine will damage the Flathead drainage. The company proposes to put 2,000-foot-deep pits astride Howell and Cabin Creeks with even larger waste dumps and the company officially claims that there will be no damage to the local or downstream environment. Well, the Montanans comment conclusively demonstrates that this is not so. The 1,000-foot-deep pit of course cuts way below the level of Howell Creek and Cabin Creek and if there is one connection through the ground water, the creeks will be dewatered and it will go into the pits and end up in the sediment ponds. If the creeks are not dewatered, they will certainly be affected by the sediment from the land disturbance and either case, it means loss of the fisheries. The Montana comments predict this.

The result is a loss of 10 percent of the bull trout for the entire Flathead drainage, stretching from the Canadian border down to the Swan and the Montana comments calculation are of course slightly based upon the presumption that the mine will be built to its design and that the mine will function and that there will be no problems. We have our doubts about that as do our Canadian allies in the Fernie Rod and Gun Club and the British Columbia Wildlife Federation.

As far as water quality, the company claims there will be no outflow from the sediment ponds for the majority of the year. The Montana comments quickly point out that the company has greatly underestimated ground water flows and assuming a generous—given a generous figure of 50 percent reclamation success, the Montana comments predict 58-percent increase in the amount of sediment crossing the border and that the North Fork will run murkey year round. The amount of phosphorus which will cross the border will be equal to 10 percent of the entire input to Flathead Lake and of course phosphorus has been identified in the studies as the key element causing decay of the lake.

The reclamation plan is officially found to be in the Montana comments extremely poor compared to Montana standards. The reclamation plan is 20 pages of vague assurances and this is their proposal. They propose reclamation on deep slopes with very little topsoil, 50 inches annual precipitation in that area and a very short growing season.

As to wildlife, the company admits there is little that can be done about the wildlife displacement on the site and the importance of grizzly bear habitat has been discussed. The Montana comments point

out that the mine may destabilize grizzly bear population in the entire area because of the bears moving out of their area which will be in conflict with other territories. The main wildlife effect of course would come from the 1,500 construction workers who will be at the mine construction site for the first 2 years. It's a fantasy to even suggest that the fishing and hunting pressure in this remote area can be controlled.

As to air quality, the coal dryer emissions will cause violations of the class I air standards over Glacier Park. If the mine were on the American side of the border, it could not be built.

The townsite may be the greatest problem of all. The 1982 proposal has eliminated the townsite but we point out that the townsite will tend to follow the mine site. There is a construction camp of 1,500 workers for the first 2 years planned at the spot and the company then plans to fold up their construction camp and for the next 20 years or so, they would bus 500 workers each way to and from Fernie each day and we rather doubt that the townsite will be folded up.

British Columbia, I understand, has zoning and, of course, there would be a lot of pressure on the north end of the North Fork on our side since there is no area there for settlement and we note that the number of other spots across the Canada border, people cross with permits and there would be pressure for that. With the 1,500 people up there, in this remote area, pressure on the wildlife and fishery would just be enormous.

For all these reasons, the project is a very high risk for Montana. During 1982, we presented a slide show to 25 service oganizations in the Flathead based on photogaphs which come from the violation reports—the official British Columbia violation reports on the other 5 mines in the Elk drainage so we know very well what we expect from this mine.

I would like to show quickly four pictures: The first one shows the Elk River running black with coal; the second one is a coal pile—a coal dump which failed, the dump then slid down to the edges of the creek, the dump is the black in the background and the settling ponds are not supposed to discharge during the majority of the year and if so only at 50 miligrams per liter and here is the effect of that; and again here is the dump failure down to the edge of the creek. These photographs physically show what we can expect from this mine and there is no reason to believe that their performance will be any different.

The mine is not only a high risk for Montana's environment but also to the local Flathead economy. The Flathead Basin study has demonstrated that 20 percent of the jobs in the Flathead are based on tourism and over the last 10 years, the 10 years being 1968 to 1978, 90 percent of the net new basic jobs were accountable to tourism. This is very important. Glacier Park gets 1.7 million visitors each year as it is a National Park and as we are all painfully aware, Glacier Park is very much dependent on what—the activities that occur in adjacent areas as Life magazine this month has so graphically shown.

The mine is also a high risk we think to the British Columbia government. British Columbia has traditionally subsidized coal mines for roads, power and rail improvement. We understand the subsidies in the northeast coal block go for $10 per ton which is a very healthy

subsidy. If the British Columbia government commits to yet another coal mine in yet a new drainage, it's making a dangerous commitment at a time when we understand there is no further moneys for subsidies. The mine could also destabilize the five mines in the Elk River drainage as there is no information indicating that there will be a net increase in the total export of coal from British Columbia. This would just cause a different cut of pie. And we note that there are layoffs at the five other mines. They're not working at anywhere near production capacity.

There is also risk in opening up a new drainage which is fabled for its fishing and hunting value and there is a risk to the British Columbia government that they may have to pay the costs of reclamation. We understand the reclamation bond is only $1,000 per acre. In Montana it goes to $22,000 per acre. It would be far cheaper for the company to simply walk away from the project and forfeit the $1,000 per acre bond than to attempt to reclaim it. Also the British Columbia government may have problems with its Federal Government in that if the mine is approved, there will be an international incident over the mine which will not help British Columbia at all.

The mine is also a high risk to the company. We understand that Japan has canceled 25 percent of its contracts on the northeast coal block. The company has no contracts with Korea or Japan on its coal and of course their big risk is that they might actually have to pay for the damage that the coal mine may do. The company in a public hearing in Fernie promised us to pay the costs of all damage to the downstream environment, however, when they see the cost of that, they shrink from this commitment. The property value of Flathead Lake was conservatively estimated at $100 million per year in our recreational study and Flathead Basin study.

So because the mine is a high risk for Montana, British Columbia, and also for the company, because it's such a marginal situation, I think we're in the position that whatever action we may take may have an effect and the requests by the Flathead Coalition in addition to what Jim talked about in terms of a review of the IJC are that monitoring be funded to continue on a baseline basis the work of the Flathead Basin study.

But we have a Senate resolution endorsing zero pollution across the border, we have Senate resolution for the Department of the Interior to pursue threats to Glacier National Park along the line of the Siberling (phonetic) bill and also we proposed an international biosphere treaty on the Waterton-Glacier International Peace Park area. This would be a special treaty for a special area. I've discussed this with John Carroll who is the author of a 1983 book on Canadian-American relations and there is precedent for these—there are special treaties for special border areas and it can also be done by executive agreement. Basically this would enable the two parks to establish an international management plan and perhaps create some mechanism for protection of buffer areas around the park and better deal with the consequences of drawing a straight line across ecosystems and drainages. On the U.S. side we have taken a number of steps toward protection of the park, the Great Bear Wilderness which connects with the park's ecosystem over to the Bob Marshall which were designated wild and

scenic rivers. We have canceled a 20 million board foot timber sale up on the north end of the North Fork largely due to cumulative impacts on the area and the area may be a management area for wildlife. Also the project to pave the North Fork road has been canceled. There are also efforts to protect the park on our side and we think that the Canadians may want to join in the effort and establish some kind of special mechanism for protecting our international park.

Senator BAUCUS. Thank you. Neil, do you have anything to say at this point?

Mr. BLUM. The only thing I would like to say, the pictures that you have seen, and there are quite a group of these here, these are errors of commissions and omissions on the part of these mining companies. Now these mining companies of which these pictures were taken started in 1972. There have been a great number of errors, slides, many, many different kinds of things that have gone on since 1972, even up until this past year. The problems have not been solved. The problems are continuing and we would look forward to the same thing happening in this mine. Each one of these mines are individual, by itself. One has a water level or a water table of 500 feet or maybe a thousand, we don't know—I don't personally know, but they all have their own individual problems and unless they are absolutely, positively sure that nothing can happen, and they can't be, I understand—if they're absolutely sure nothing can happen, fine, but as long as they can't be, then there is no reason for those mines to go in until they can be. And I think, I for one for the Flathead Coalition, feel that the mine should not go in at all. Now there's a harsh statement. It's real harsh and I certainly feel sorry for these people up there looking for jobs. We all need jobs. But until they can come up with more evidence of factual, not wishful thinking, hand-me-the-buck kind of a situation, you know, if they come up with more facts, then at that point they might proceed. But up until then, I think anything that we should do in this country, Senator, should be geared to stopping that mine thoroughly, completely, 100 percent.

Senator BAUCUS. I appreciate that. I'll ask you a tough question, What would happen if they were to guarantee that they would abide by U.S. and Montana standards in every respect?

Mr. BLUM. I asked the president of the company on a trip up there a similar question and I also said to him, would you put up a bond to the effect of—and it's many, many millions of dollars, to the effect that if any damage you created up here in this area, that whatever went into Montana, would you put up a bond? Now his answer to me, not publicly but between he and myself, was "sure." Well, I said, what are we waiting for, you can get it done, you can get your show on the road and we can wind our coalition down instead of watching what you're doing and let's get going. I still have to see that happen. So it's not going to happen. It's talk.

Somebody made the point about their sincerity, one of the earlier speakers. I found their sincerity to be questioned tremendously and I think you for one are in the position to look into the company and its background which is very, very important and you can pull out stock reports on Rio Algum which is the owner of this company and just see what they're involved in. You'll get an idea what an operation is like and whether it's very sincere. You should look at that. You should look at the kind of people we're dealing with.

Senator BAUCUS. It's your position that even if the company were to state that it would abide in every respect by Montana and Federal environmental standards, that still based upon the prior performance of the company in British Columbia, officials——

Mr. BLUM. I think you're a good Senator. I like you. I voted for you. I told you that the last time I met you and the thing here is that, sure, I'll promise you the world, I will. I'll promise you the world, if I'm looking at a million dollars over here that is going to land in my pocket. But when it comes to producing, can I? No. And that's where they're at.

Senator BAUCUS. I have another question. I understand that the Flathead Coalition's efforts have been very, very effective in this I might add. Both you, Jim and Jon, made some excellent points. It all helps me very much as I know it does others, too. I'm wondering, are you also focusing on efforts in the valley here to help maintain and preserve a very attractive environment here other than the Cabin Creek problems? I mention that because it strengthens our hands when we talk to the British Columbians.

Mr. BLUM. I have to answer that. I appeared at a Commission hearing here just a week ago—a week ago today or Thursday—well, a week ago. And this had to do with one of the developments down on the lake and a problem that we looked at at that time.

Now we do get involved in other things but of course our major problem is a lack of manpower and of course we have a budget problem. We had to take our biggest headache and try to get the aspirin to that as fast as we could. There is a whole bunch of these all around the lake. It's going to take a great deal of money. As an example, let's take the old septic tank on the lake, on the river. There are problems there. There are. And I hope that Evergreen does solve its problems and I would like to see a good sewer plant go into there without dumping the end result into the river, you see, like Kalispell is doing at this time and like Columbia Falls is doing it, too. And I think those things can be cleared up, eliminated. But you know, how many times do you have to attack all of these problems to get on all of them. We handle as many as we can but how many can you do.

Senator BAUCUS. Sure. I'm just suggesting, if we can show good faith even though we haven't accomplished it yet, if we're acting, moving in that direction.

Mr. BLUM. It's on the county commissioner' record for last week. If you would like to get a copy of it, I would be glad to send it to you.

Senator BAUCUS. I was interested, Jon, in your statement. As near as you can tell, the eastern coal block was subsidized for $10 per ton—do you mean the northeastern development in British Columbia?

Mr. HEBERLING. The far northeast coal block.

Senator BAUCUS. The question I have though, if you can tell me, what would it cost British Columbia to subsidize the Cabin Creek Development? I assume it would be a higher cost. I don't know if that's the case or not.

Mr. HEBERLING. I should think it would be at least $10 per ton. That question is under study by Dr. Loren McKenzie at the Canadian-American Relations Unit at Bozeman. Our information in that regard has come from him. He is studying the Pacific rim coal market this summer with a view toward our problem.

So $10-per-ton subsidy on about an 85-per-ton coal export price is at the Flathead Basin steering committee meeting that he understood about a 12 percent subsidy and Loren McKenzie did make a statement that there were no more moneys for subsidies. That leaves the British Columbia government in a difficult position for that reason.

Senator BAUCUS. You made a lot of good points too, Jim, about the IJC and weaknesses that are inherent in the system and I think that it's a good idea for Congress to exploree changes in the treaty as well as the International Joint Commission and it affects United States-Canadian points of view. Even though perhaps the barn door is open, it may be a little late closing the barn door but it helps to prevent future problems and I think it will help raise the consciousness of the profile to the president——

Mr. BLUM. I'm sure it will help. I have one thought. I think if we go back here, I would say probably 15 years ago, there was a big problem with the lamprey eel in the Great Lakes. Do you recall that? Do you know that problem?

Senator BAUCUS. Yes. They got together.

Mr. BLUM. Didn't they get together and they have gone a long way to get that problem licked. That also includes pollution. Now Lake Michigan, I was just there in March and I pulled out of Lake Michigan rainbow and brown trout 12, 12½ pounds and those fish did not exist 10, 12 years ago. They just did not exist. Now if we do get together on the Great Lakes, why can't we do it all along the rest of the border. It's only a matter of getting together. Very practically what we're doing is looking at a great big ladder that is up here 50 feet. None of us are going to fly up there; that's physically impossible. But if we step on the first rung which is the treaty that Jim and Jon talked about, a possible treaty between us, thou shalt not do this no more, then go to the second rung, get those things and keep those things we have clean, get to those problems and just escalate from those and there is no reason that can't be done. We have already done it. You see, it's just a matter now of continuing it. It should be very easy.

Senator BAUCUS. If we left it to people like you, it would be done. That's for sure. I want to thank you all very much and this has been a very valuable hearing. I also want to thank Senator Durenberger as we're now adjourning. I thank him, he obviously has done his homework. He has learned a lot about our State, about the Flathead and the problems that we're facing here and I want to publicly thank him. Second of all, I'd like to thank the witnesses who are here leading off with the Commission and ending with the coalition. You have all been very helpful and that means a lot to all of us. Thank you very much.

[Whereupon the hearing was adjourned.]

[Statements submitted for the record follow:]

State of Montana
Office of the Governor
Helena, Montana 59620

TED SCHWINDEN
GOVERNOR

PRESENTED TO THE U.S. SENATE SUB-COMMITTEE ON
TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT,
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
KALISPELL, MONTANA, JULY 6, 1983

Chairman Durenberger and Senator Baucus, thank you for this opportunity to appear before you and your sub-committee to reaffirm the State of Montana's continued concerns for the Flathead Basin and the area's ecosystem.

The values here in Northwest Montana were featured in the July issue of LIFE magazine. In an article entitled "Nature Under Siege," the proposed Cabin Creek coal mine is listed as one of the threats to Glacier Park's natural beauty. No one can accurately estimate the value of the Glacier-Waterton International Peace Park to Montana, to the United States and to Canada. It is priceless. The fact that a sub-committee of the U.S. Senate is holding hearings here today testifies to the worth of this area.

Citizens of the Flathead Valley became concerned about possible adverse impacts on Montana's air and water quality with the Canadian announcement a few years back of a proposed coal mine just above the Canadian border. That public concern, coupled with state support and the leadership of Senator Baucus, resulted in a five-year study under the direction of a Flathead Basin Steering Committee. The Steering Committee compiled and analyzed baseline data of the

existing environment of the Flathead Valley. The Flathead Basin Steering Committee recently terminated its study and completed its report on June 30, 1983.

With the publication of the final EIS on the Flathead Basin, the Steering Committee went out of existence. The 1983 Montana Legislature, aware of the demise of the Steering Committee, passed SB161 which created a two-year Flathead Basin Commission. The Commission will consist of 15 members including local, county, federal, state, tribal and Canadian representatives. The Commission will monitor and address issues of environmental and social concern to the Flathead Basin as a result of developments on either side of the border.

The Steering Committee, through the EIS, has done an excellent job of defining existing environmental conditions. With that knowledge the newly established Commission will be abie to track any changes in the environment resulting from future land uses and developments in or around the Flathead Valley.

British Columbia provincial officials and the representatives from Sage Creek Coal Limited have assisted in establishing a workable rapport with the Steering Committee and Montana State representatives. They have actively participated in numerous data exchange meetings over the past five years, and we look forward to their continued cooperation in assisting the newly established Commission.

On May 13, 1982, Montana submitted a detailed 121-page technical document addressing Montana's major concerns with Sage Creek Coal Limited's Stage II

Mining Application to the government of British Columbia. Our comments addressed the general issues of: 1) air quality, 2) water resources and aquatic ecology, 3) hydrology & geomorphology, 4) fisheries, 5) terrestrial wildlife, and 6) reclamation.

On September 27, 1982, the government of British Columbia responded to Montana's concerns in a 12-page letter. After the State had reviewed British Columbia's response, a second set of comments was sent on December 17, 1982. That second set of comments addressed the issues of: 1) water quality and quantity, 2) hydrology, 3) air resources, 4) reclamation, 5) wildlife, 6) stream depletion, and 7) international aquatic resources. Last week I received the official response from Premier Bennett's representative at the Western Governors' Conference here in Kalispell.

I sent a letter to Premier Bennett yesterday requesting a meeting on July 19, 1983, between the Premier's staff and appropriate Cabinet ministers and Montana's director of Natural Resources and Conservation, Commissioner of State Lands and my staff. The purpose of the meeting would be to discuss in more detail the issues we have raised through correspondence during the past few years. I have also requested that the Premier delay a Cabin Creek decision until our staffs have had a chance to meet, and I have also asked for an opportunity for Premier Bennett and me to meet and discuss the implications of such a decision on both our environment and our border relations.

The proposal submitted by Sage Creek Coal Limited does not adequately address the issue of water management. The capacity of the sedimentation ponds appears to be too small, and the proposed waste dumps would be located

only 90 meters from Howell and Cabin Creeks. Those dumps would be approximately three times higher than their distance from the creek. Sediment erosion and revegetation could pose serious problems on steep slopes. The possible degradation of air quality in the Glacier-Waterton International Peace Park and World Biosphere, is another serious concern not only for Montanans, but for all North Americans.

The State of Montana believes that appropriate mitigating measures must be taken by the government of British Columbia and the Sage Creek Coal Limited, or Montana will ultimately suffer varying forms of environmental losses. The inevitability of spills and failures, the increased pressure by humans, and the possibility of sedimentation and associated water quality problems could result in serious environmental impacts for years to come.

The State of Montana continues to believe that only by maintaining open communication with our Canadian neighbors, and by fostering mutual cooperation, can Montana and British Columbia develop their resources without compromising the integrity of the environment on either side of the border. Through our past discussions on Cabin Creek, we have already opened the door to cross-border communications. We look forward to continued cooperation with the government of British Columbia.

Once again, thank you for this opportunity to express Montana's concerns.

State of Montana
Office of the Governor
Helena, Montana 59620

TED SCHWINDEN
GOVERNOR

May 13, 1982

The Honorable William Bennett
Premier of British Columbia
Parliament Buildings
Victoria, B.C. V8V 4R3
CANADA

Dear Premier Bennett:

The attached comments, including an executive summary and technical evaluation, represent the formal response of the State of Montana on the Sage Creek Coal Company Stage II application. To my knowledge, this is the first time the State of Montana has been afforded the opportunity to comment on a major development within Canada before the permits have actually been issued. I welcome the opportunity to comment in advance and trust that you will give them serious consideration.

It is clearly in the best interest of both of our countries to manage our lands and resources in a manner that promotes a variety of multiple-use values without causing significant environmental damage. No matter how elaborate a system of review, planning, or permitting, the success of that system depends largely on the quantity and quality of information used to make a specific decision. It is with this in mind that the State of Montana offers the attached comments.

Many laws and regulations have been adopted both at the state and federal level to address the effects of energy development and to protect and preserve the environment. While we recognize there are different ways to reduce the adverse impacts, our analysis is primarily based on a comparison of our experience and requirements with similar projects in Montana.

As I mentioned in my letter of March 26, 1982, our primary concern is to protect Montana's resources which will face extreme demands and pressures in the near future. Through constant communication and cooperation, I am confident that we can develop our resources without compromising the integrity of the environment. As the first step in that process, I would like to propose a bilateral meeting prior to a final decision on the permit to discuss our concerns and formulate a joint strategy to meet tomorrow's energy demands with today's resources.

I look forward to hearing from you soon.

Sincerely,

TED SCHWINDEN
Governor

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Copies of this document have been sent to the following:

Jake McDonald, Chairman, Coal Guidelines Steering Committee
Dennis McDonald, Regional Director, Ministry of the Environment of British Columbia
Robert McClelland, Minister of Energy, Mines and Petroleum Resources of British Columbia
Herb Pakrul, President, Sage Creek Coal Limited
Senator Max Baucus, Washington, D.C.
Ron Cooper, Flathead River Basin Study

A. Outline of Montana's Major Concerns

(1) The design of the proposed mine's water management plan, mine lay-out and reclamation are critical to insuring that the North Fork of the Flathead River is not degraded to the detriment of Montana. The Sage Creek Coal Company is to be commended for conservatively assessing storm events, a major basis for design criteria. We are concerned that considerable amounts of ground water would need to be handled throughout the year, forcing ponds to decant on a regular basis. Based upon a 50 mg/l standard, the North Fork of the Flathead River could be degraded. Elements such as phosphorous, nitrogen, and trace metals released from the disturbance of overburden and coal deposits could significantly increase in the Flathead system. Montana is also concerned about the acid-producing potential of the overburden material. The application fails to address these concerns adequately.

(2) It is extremely positive that British Columbia has recognized the importance of Howell Creek to the Flathead River/Lake fishery. Howell Creek is responsible for ten percent of the bull trout which contributes significantly to the recreational economy in the entire basin. We are concerned that the close proximity of waste dumps, proposed rock berms, the potential to dewater the stream and potential for released metals could negate your steps to protect this resource.

(3) Air quality, although not addressed in the Stage II application, is of particular concern to Glacier National Park where degradation could seriously compromise this resource. Our assessments indicate that Montana standards for particulates, sulphur dioxides, and perhaps visibility would be violated in this Class I airshed. Adequate consideration should be given to these potential impacts.

(4) The reclamation plan submitted was somewhat of a disappointment. It was far less than what Montana would consider appropriate. The success of the reclamation plan is critical to insuring the long-term protection of the river system. We have serious reservations that waste dumps at 26° (or greater) can be expected to sustain an erosion-resistant cover. Our concerns are heightened due to the close proximity of the dumps to Howell and Cabin Creeks.

B. Executive Summary

Air Quality

The State of Montana conducted computer simulations of the effects of the emissions from the proposed project on air quality within the United States. Two different simulation techniques were used. Both techniques predict values in excess of the Montana and federal prevention of significant deterioration standards for particulate matter. The techniques also indicate a risk to the special air quality considerations afforded to Glacier National Park for sulfur dioxide as well as particulate matter. The State of Montana is also concerned about the effects of the proposed development on visibility, since a visibility standard exists for Glacier National Park. The Stage II assessment contains no analysis regarding this standard.

Water Resources and Aquatic Ecology

The volume of ground water to be intercepted by drainage ditches or pumped from the pits appears to be underestimated in the Stage II application.

The deep, contaminated water ditches (and possibly the sediment ponds) could intercept ground water in fluvial gravels cross-connected with the creek, exporting large volumes of water from the surface and ground water system of the creek to the sediment ponds. In addition, the potential ecological effects of dewatering in Howell Creek (by the contaminated water ditches intercepting the fluvial ground water) has been overlooked in the Stage II report.

Another ground water quality problem could be created by the design of the waste dumps. No specific data on expected metal concentrations and other constituents in the overburden leachate are given in the Stage II report.

The ground water and leachate acid tests and bioassays are of questionable value due to their design and endpoint. The potential for acid and metals mobilization in the proposed dumps (and possibly within the pits via ground water breakout) remains open to much more detailed investigation.

The assumptions used in the water quality model are questionable. The results are too vague to be of much value in predicting downstream consequences of the proposed operation.

Howell Creek and the Flathead River could be affected by enhanced nutrients and lower oxygen values in waters seeping from (and directly discharged from) the settling ponds. Nitrates from blasting, coupled with phosphorous-rich sediments would likely produce algal blooms in the ponds, depleting the oxygen on the pond bottom. Anaerobic (oxygen-free) conditions in the ponds could mobilize trace metals to toxic levels.

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More information should be presented regarding the "organic polymer" proposed for use as a tailings thickener (pg. 4-28 of Stage II report). Additional information is necessary to determine if such a chemical poses any threat to ground water quality.

Somewhere between 16-24 cubic feet per second (cfs) of water would need to be pumped from the two pits. In addition to ground water, runoff from tailings and the mine area would move into tributaries and the river system. This volume of water would cause the tailings ponds to discharge on a regular basis. The 50 mg/l standard is equal to 3.85 tons per day with an associated discharge of 24 cfs. Significant impacts from additional sediment loading would occur during low and moderate flow periods, about nine months of the year. Retention time is critical and needs further analysis.

The report states "Impacts on surface hydrology are not expected to be significant." The long-term hydrologic impacts may be overshadowed by development and natural buffers, but short-term (monthly or year-long) impacts may alter long-term recovery patterns.

The high precipitation experienced at the minesite would cause significant amounts of water to percolate through the waste disposal dumps thus removing a high percentage of soluble constituents. The Cabin Creek coal fields have been generally correlated with the Great Falls-Lewistown coal fields in Montana, known producers of acidic waters. Generally, the more acidic the water becomes, the more metals can become soluble. Potential impacts to aquatic biota from this drainage have not be assessed in the application.

Depletions to Howell and Cabin Creeks could occur through: (1) a reduction in spring flows and seepage as a result of dewatering the pits; and (2) through induced infiltration caused by lowering of the water table adjacent to either Howell or Cabin Creek. These depletions could reduce aquatic habitat and affect spawning migrations. These potential impacts have likewise not been addressed.

The usefulness of the work on aquatic insects in Howell and Cabin Creeks outlined in the Stage II application is questionable, as are data reported in Sheehan et al, 1980 ("A Water Quality Study of the Flathead River Basin in British Columbia Prior to Proposed Coal Mining"). Ongoing studies at the University of Montana Biological Station show that the insect community in Howell Creek is much more diverse than the above reports indicate. In addition, diversity indices based on anything less than species-level taxonomy are not useful in predicting less than extremely severe impacts. The observed degradation of the sort detectable by those gross indices already has been seen in the lower reaches of Howell Creek, indicating that mining exploration and logging have already impacted the creek substantially. Based on these concerns, there appears to be little hope that Howell Creek can be maintained in its productive and pristine state during and after mining. Therefore, the importance of the creek as a bull trout spawning and rearing site may be limited by mining activities, thereby affecting the downstream integrity of the Flathead River-Lake system.

Hydrology and Geomorphology

Flood flows assessed using U.S. Geological Survey regression techniques demonstrate that there is good agreement with the estimates determined by Sage Creek Coal Company. Also, event storm projections made by the consultants for Sage Creek Coal Company compare favorably with estimates generated by Montana. However, the water ditch draining Dump D under existing design could be jeopardized during flood events.

Qualitatively, it appears that Ponds No. 2 and 4 could be encroaching within the floodplain. Any encroachment would threaten Howell and Cabin Creeks. Since backflooding could occur, the confluence of Cabin and Howell Creeks could be a particularly critical area.

Annual precipitation values generated using isohyetal maps furnished by the United States Department of Agriculture Soil Conservation Service indicated that mean annual precipitation values are significantly higher for both Howell Creek and Cabin Creek than the Stage II application indicates. The U.S.D.A. has been measuring precipitation for a number of years and their data indicates significantly greater amounts of precipitation on the west side of the valley than along the continental divide. The mean annual precipitation for Cabin Creek is 1,372 mm versus 625 mm generated by the consultants for Sage Creek Coal Limited (Appendix 2.1.1); for Howell Creek mean annual precipitation is 1,219 mm versus 575 mm identified by the consultants; and for Flathead, B.C. mean annual precipitation is 1,306 mm versus 756 mm identified by the consultants.

The Stage II report tended to rely upon peak rainfall estimates in setting design criteria. Whether a design selects the 50 or 200 year storm, the final design storm needs to depend upon supporting criteria which includes: (1) antecedent moisture conditions; (2) potential for snowpact prior to the storm; (3) knowledge of the distribution of rainfall within the 24-hour period; and (4) supporting climatic data and the probability of the occurrence of them in combination.

Calculations of 50-year - 24-hour rain on snow events are approximately 300 acre-feet greater than the 50-year flood volume indicated by Sage Creek Coal Company in the application. This increased precipitation could contribute to loss in efficiency of sediment removal during the latter years of the project.

The construction of drainage ditches on relatively steep slopes through glacial till have a tremendous potential to erode. Control measures are inadequately addressed in the report.

The terrain, climate and style of mining contribute to the high potential for sedimentation problems both during and after mining. Using the applicant's sediment pond efficiency of 80 percent to 97 percent (and assuming case II present in this report) the annual yield

of sediment from the minesite would represent 14 to 30 percent of the average annual sediment load in the North Fork of the Flathead River at the United States-Canadian border consisting primarily of silt and clay size material.

Sedimentation problems in Montana, caused by the mine, would increase during the postmining period. Our calculations indicate that even with a 90 percent reclamation success, the mine would generate 11,000 tons of sediment annually.

Fisheries

It is believed that the proposed mine on Cabin and Howell Creeks in the North Fork of the Flathead River drainage in British Columbia poses a significant threat to the fishery of the upper Flathead River Basin. Any localized impacts on fish populations in Cabin Creek, Howell Creek, and/or the North Fork of the Flathead River would be reflected throughout the Flathead River-Lake system because of the migratory nature of the two principal gamefish, the westslope cutthroat trout and bull trout. The North Fork drainage of the Flathead River supports a Class I (highest value) fishery resource and is inhabited by two species of statewide special concern, the westslope cutthroat trout and the shorthead sculpin. The trophy bull trout fishery of the Flathead system is a unique state resource and is undoubtedly one of the most extensive high-quality bull trout fisheries in the contiguous United States.

The most concentrated bull trout spawning area in the entire Flathead River system above Flathead Lake is located in the portion of Howell Creek that runs directly through the proposed minesite, between the North Hill Pit and Waste Dump E. This spawning area contained 15 percent of all bull trout spawning sites found in the entire North Fork drainage during the 1981 spawning season. Based on in-house analysis and a more detailed review by professional Montana hydrologists, it is believed that significant sedimentation and dewatering of the critical Howell Creek bull trout spawning area would occur if mining activities are conducted as planned.

Increased sediment loading to the Howell Creek and North Fork drainages would likely occur if the settlement ponds and drainage ditches are inadequately designed. We are concerned that the mine drainage system is not designed to properly handle a "cold-low" type flood event. Critical design information pertaining to the design of clean and contaminated water ditches was omitted from the Stage II Assessment. Fine sediments would fill in intergravel spaces in the stream bottom which would decrease available habitat for juvenile fish and their invertebrate food supply. The survival of incubating fish eggs and fry would be reduced because decreased intergravel water flow would result in reduced oxygenation and increased accumulation of toxic metabolic wastes.

Dewatering of Howell Creek during base flow periods would result from interception of ground water by mine cuts and also from lateral subsurface flow from the stream channel to the mine pit as excavation proceeds below the elevation of the streambed. Future re-entry into the

mine pits to extract deeper coal seams (located well below the valley floor) would probably result in the complete dewatering of Howell Creek during base flow periods. Dewatering during base flow periods would reduce or eliminate bull trout passage to the critical Howell Creek spawning area and would also reduce rearing and overwintering habitat for juvenile fish. It is estimated that the elimination of the Howell Creek bull trout spawning area would result in an annual loss of about 3,000 adult (18 inch) fish to the Flathead River-Lake fishery.

Potential water quality alterations resulting from mining activities pose more of a threat than has been acknowledged in the Stage II assessment. It is expected that anaerobic (oxygen-free) conditions would exist in the settling ponds during periods of winter stagnation due to the input of ammonium nitrate into mine drainage waters as a result of overburden blasting. Anoxic settling pond effluents would be extremely toxic to eggs, fry, and juvenile fish in the Howell Creek drainage and throughout the Flathead system. The potential for significant acidification of Howell Creek waters was inadequately addressed. If acidic Seam 4 leachates were to enter Howell Creek waters, the downstream fishery impacts would be significant. It is suggested that the settlement pond effluent suspended solid standard be lowered from 50 mg/l to 15 mg/l to insure adequate protection of the fishery resource of Howell Creek and to insure compatibility with Montana water quality standards.

The Howell Creek floodplain was inadequately defined in the Stage II assessment. Development within the 200-year floodplain should be precluded in order to preserve riparian vegetation, allow for natural channel movement, and reduce the potential for flood-induced settlement and drainage ditch failures. Encroachment on the floodplain (such as the proposed rock berm) would result in increased sediment loading and stream channelization. Increased stream channelization would result in larger substrate, gradient, and current velocities which would reduce habitat quality for spawning bull trout.

It is emphasized that increased sedimentation and water quality alterations would not only affect the Howell Creek drainage but would also impact the North Fork of the Flathead River and perhaps Flathead Lake. Increased sedimentation of the North Fork would fill intergravel spaces and cause the river channel to become wider and more shallow. Decreased river-bottom substrate porosity would reduce invertebrate populations, fish carrying capacity, and fish overwintering habitat. The North Fork of the Flathead River is important to all migratory gamefish species in at least two phases of their complex life cycles. Over half (56 percent) of the nearly 38,000 cutthroat trout caught during 1975 in the entire Flathead River system above Flathead Lake were taken in the North Fork. Reductions in populations of migratory cutthroat or bull trout in the North Fork system would result in reduced recruitment to the Flathead Lake fishery.

The fisheries data presented in the Stage II assessment contains inadequacies and numerous omissions. The importance of the North Fork in the vicinity of the Howell Creek confluence is virtually unknown. The fisheries potential of Cabin Creek was largely ignored in the

Stage II assessment. The fishery potential of Howell Creek above the minesite was also poorly documented. Fish population survey sections appeared to have been selected for their representation of a particular stream reach, and the fish population estimate technique employed was inadequate and statistically inaccurate. The existing fishery resource must be adequately quantified before meaningful assessment of potential environmental effects can begin. Meaningful environmental changes cannot be monitored until adequate baseline information is established.

If the mining plan is approved, an intensive environmental monitoring plan should be implemented. Measured parameters should include surface and ground water quality and quantity, aquatic invertebrates, stream bottom substrate composition, fish population levels, and spawning surveys. The monitoring program should include sites above and below the minesite on Cabin and Howell Creeks as well as locations on the North Fork of the Flathead River above and below its confluence with Howell Creek. Periodic monitoring reports should be issued to appropriate American and Canadian agencies. Corrective measures should be taken immediately if environmental problems are detected.

Terrestrial Wildlife

Little attention has been given to maintaining riparian habitats both for the protection of the fishery resources and as an important component of protecting wildlife.

The wildlife assessment was based on only three weeks of field surveys, a level of intensity which simply precluded the development of a meaningful data base. The superficial treatment given wildlife hampered meaningful assessment of the impacts of the mine on Montana and Glacier-Waterton International Peace Park. There is no evidence presented in the Stage II application that the mining activities can be mitigated for wildlife.

Grizzly bears are seriously threatened by the mine proposal. The data presented are somewhat ambiguous, but it appears that 8-16 bears might be displaced. This could represent as much as 32 percent of the 50 to 65 area population although direct impact would probably be less. This impact would tend to destabilize the area population with the effects extending into Glacier National Park and Montana.

The loss of 8 grizzly bears could cause a general reduction in productivity resulting in reduced biological resilience and recreational opportunities in the future.

The loss of 10 percent of the moose population through direct impacts, although not jeopardizing the population, could adversely affect the number of moose available to colonize new habitats in Glacier National Park.

Elk and white-tailed deer would also be affected by mining, but like moose, the overall populations would not suffer greatly. Both species may move south into Glacier National Park during the winter. Shifts in ungulate numbers may affect predator populations including

wolves, coyotes, lions, lynx and bears, as well as scavengers such as eagles and wolverines. No attempt has been made to access these impacts.

The statement that the mine would not affect wolves has not been documented. This species is endangered and the area population is not currently stable. Recovery is not likely unless freedom from disturbance can be assured, especially near denning and/or rendevous sites.

A general lack of adequate data precludes a quantitative analysis of impacts on species such as harlequin ducks, bald eagles, ospreys and river otters which could utilize the minesite as well as Glacier National Park and the Montana portion of the drainage. The lack of an adequate wildlife baseline would make any meaningful mitigation or monitoring difficult if not impossible.

The estimated 10 percent for the moose population may be low if the haul road and land cover types are compared. Five or six miles of the road lie in an ecotone between coniferous forests and willow areas indicated to exhibit a high level of ungulate movements. Frequent truck travel would displace moose from these habitats. The report largely ignores this impact.

The results of the browse survey indicating that moose are not up to carrying capacity and thus may successfully be displaced has not been substantiated through Glacier National Park research in the North Fork Valley nor through the literature. Availability of key winter habitats may be more limiting to moose than overall volume of browse over an entire landscape.

Reclamation

The reclamation plans are extremely sketchy. It would be extremely difficult to reclaim waste dumps with proposed 2:1 slopes. The steepness of the slopes necessitates a setback greater than 90 [redacted]meters from Howell and Cabin Creeks if the objective of protecting water quality and the high quality fishery are to be met. A detailed reclamation plan similar to Montana's standards should be prepared prior to approval of the mine due to the large potential of affecting Montana's resources.

The reclamation plan fails to address monitoring and alluvial aquifers in sufficient detail to enable commenting.

C. Technical Evaluation

Province of
British Columbia
OFFICE OF THE MINISTER

Ministry of
Energy, Mines and
Petroleum Resources

Parliament Buildings
Victoria
British Columbia
V8V 1X4

September 27, 1982

The Honorable Ted Schwinden,
Governor,
The State of Montana,
Helena, Montana,
U.S.A. 59620

My dear Governor Schwinden:

Re: Sage Creek (Cabin Creek) Coal Project

As my predecessor, the Honourable R.H. McClelland, indicated to you in his letter of June 22nd, 1982, I am forwarding to you British Columbia's responses to your State's critique of the Stage II submission for the above project. The provincial responses have originated from the B.C. Ministry of Environment and my own Ministry.

I would like to take this opportunity to thank you for your State's considerable efforts in reviewing the Stage II documents. As the attached material shows, we are in general agreement on many points of concern, and I would once again like to reassure you that the Environment and Land Use Committee of the Province's Cabinet would only grant Stage II approval-in-principle to this project if it is satisfied that sufficient care has been taken to minimize adverse environmental impacts. At this time I am not able to say when the Committee will be in a position to review the Stage II recommendations of our officials.

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In the meantime, if you have any questions or comments regarding my letter or the attached material, please do not hesitate to contact me.

Yours sincerely,

Brian R.D. Smith,
Minister.

Attachment

ccs: The Honourable W.R. Bennett, Premier
The Honourable C.S. Rogers, Minister of Environment
Mr. J.D. McDonald, Chairman, Coal Guidelines Steering Committee
Mr. H.A. Pakrul, President, Sage Creek Coal Ltd.

SAGE CREEK COAL PROJECT

STAGE II SUBMISSION

(November, 1981/January, 1982)

BRITISH COLUMBIA RESPONSE TO REVIEW

COMMENTS OF THE STATE OF MONTANA

I. GENERAL COMMENTS

1. This document addresses only those matters which fall within British Columbia's jurisdiction.

2. The majority of those Montana concerns which fall under British Columbia's jurisdiction are similar to those which are being raised by the B.C. Ministry of Environment and the B.C. Ministry of Energy, Mines and Petroleum Resources as part of the Stage II review.

3. Montana's brief identified a few issues which had not previously been identified by provincial staff, but which fall within provincial jurisdiction. The Province will be taking up these issues with the company during the Stage II review.

4. Some of Montana's points fall within British Columbia's jurisdiction, but are not normally addressed at Stage II of the Coal Guidelines Review Process (CGRP). The CGRP is a three-stage process. The Sage Creek Coal Project is presently at Stage II. At this stage, the mining company is expected to produce a mining plan and an impact assessment (a Stage II submission) in sufficient detail that government officials can determine: (i) whether or not all important potential project impacts have been identified; and (ii) whether or not these potential impacts can be effectively managed to reduce them to acceptable levels.

   If the results of the Stage II review are satisfactory, the Environment and Land Use Committee of the Provincial Cabinet will grant Stage II approval-in-principle to the project, allowing it to proceed to Stage III, the licencing stage. This approval-in-principle is not final approval, since it is always granted subject to a mining company being able to satisfy regulatory permitting requirements at Stage III.

   At Stage III, the company is expected to finalize its mining design and its applications for licences, permits and other approvals to ensure that the project will comply with provincial requirements.

   Many of Montana's concerns fall properly into Stage III of the CGRP. For example, specific effluent and emission discharge criteria for suspended solids, suspended particulates and sulphur dioxide are normally set by regulatory agencies when permit applications are processed at Stage III. Such criteria cannot be finalized until applications for permits (and any necessary additional technical information) have been obtained. The same is true for reclamation requirements. Of course, concerns and constraints which are recognized at Stage II have an important bearing on the final forms of permits which are issued at Stage III.

..... /2

5. Some of Montana's concerns stem from its belief that all available technical data should appear in the Stage II submission. Some of its concerns would likely be reduced if it had access to two of the company's background reports:

   (i) Klohn Leonoff Consulting Engineers, 1981. Drainage Plan for Sage Creek Coal, Southeastern British Columbia; and

   (ii) Pacific Hydrology Consultants Ltd., 1982. Sage Creek Coal Ltd. - Stage II Environmental Assessment - Groundwater Study.

   The company advises that it has already provided copies of these reports to Montana representatives, and should be contacted if there is any problem in arranging access to the reports.

II. SUMMARY OF MONTANA CONCERNS

British Columbia understands that the main concerns of Montana with respect to the Sage Creek Coal Project fall under the following four general headings:

1. Air Quality

   Montana states that its standards for particulates, sulphur dioxide and visibility would be exceeded in the Glacier National Park airshed.

2. Water Quality and Quantity

   Arguing that large quantities of groundwater would have to be handled during project development, Montana concludes that the various settling ponds would discharge on a regular basis, leading to sedimentation of the North Fork of the Flathead River, particularly if a discharge standard of 50mg/l is adopted. In addition, Montana has expressed concern over potential contamination by phosphorus, nitrogen and trace metals, and over potential acid generation, both problems originating from coal and overburden disturbance.

3. Howell Creek Fishery

   Howell Creek is estimated to contribute ten per cent of the Dolly Varden of the overall recreational fishery of the upper Flathead basin. The proximity of waste dumps and berms to the creek, and the potential for creek dewatering and released metals could potentially undermine stream protection measures.

4. Reclamation

   Montana contends that the Stage II reclamation plan does not meet standards which would be imposed in Montana. Of particular concern are the steep gradients of the waste dumps and the proximity of the dumps to Howell and Cabin Creeks.

III. AIR QUALITY

1. Montana Concern #1

Suspended particulate levels would exceed Montana State and U.S. Federal standards.

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B.C. Response

The concern is allied to a concern of the B.C. Ministry of Environment (BCMOE). More work is required on the project's potential impacts on ambient air levels. Suspended particulate levels near fugitive dust sources could exceed provincial guidelines on occasion. There is insufficient meteorological data to accurately predict whether or not levels would be unacceptable southwards from the minesite towards the International Border. The BCMOE intends to pursue these matters with the company.

2. Montana Concern #2

Suspended particulate, sulphur dioxide and visibility standards for Glacier National Park would be exceeded.

B.C. Response

There are no provincial visibility standards which apply in this situation. Visibility will be locally decreased but, lacking adequate data, the locations and extents of impacts are uncertain. However, visibility impairment at the International Border is unlikely.

Based on maximum emission rates, sulphur dioxide levels associated with thermal dryer emissions are expected to remain below both B.C. and Montana air quality ceilings for public health, and are unlikely to exceed BCMOE guidelines at any point of ground impingement. As noted above, however, predictions of dispersion and ambient concentrations are difficult, given available meteorological information.

In any event, specific air quality impact and mitigation concerns cannot be finally resolved until the company submits its applications for Pollution Control Permits covering emissions, together with related detailed technical information. Air quality monitoring would be a normal requirement of any emission-related permit, with specific details to be established during the permit processing phase (Stage III).

IV. WATER QUALITY AND QUANTITY

1. Montana Concern #1

Groundwater volumes from pit dewatering and ditch interception are underestimated in the Stage II report.

B.C. Response

The Stage II report may underestimate groundwater volumes, and this is conceded in the 1982 report of Pacific Hydrology Consultants Ltd. Montana would find it useful and informative to review that report.

2. Montana Concern #2

Dewatering of Howell and Cabin Creeks could result from pit excavation and dewatering, or from interception ditches.

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B.C. Response

This is a new concern which the BCMOE will be pursuing with the company, since it has potential implications for key aquatic habitats.

3. Montana Concern #3

Acid generation potential (and related heavy metal problems) associated with overburden leachates has been insufficiently studied.

B.C. Response

Acid generation concerns are not justified, since acid mine drainage is not a problem in the southeastern coalfields of B.C. Leachate monitoring at other mines in the region has revealed that supended sediment and nitrogen levels (rather than acid generation) are the major water quality concerns. In any event, buffering capacities at the Sage Creek minesite are generally sufficient to minimize concern.

More data on groundwater quality will be required in any event, and such work is proposed by the company at Stage III. The BCMOE supports items #1 and #2 (although not items #3 and #4) from page II-6 of Montana's critique.

It should be noted that a stratigraphic correlation of the Sage Creek and Great Falls/Lewiston coal strata is meaningless without comparing their characteristics. In this regard, access to references cited on pages II-2 and II-5 of the Montana critique would be useful to BCMOE staff.

4. Montana Concern #4

The water quality model in the Stage II submission is based on questionable assumptions, leading to inconclusive results.

B.C. Response

The BCMOE is already pursuing similar concerns with the company.

5. Montana Concern #5

Nutrient inputs to settling ponds may generate algal blooms, and the resulting anaerobic conditions could produce toxic levels of trace metals.

B.C. Response

This is a new item, but is not considered to be a major provincial concern. Anaerobic conditions and the suggested results have not been observed in settling ponds at coal mines elsewhere in the region. The BCMOE will advise the company to assess the possible implications of the findings of Turbak et al. (1979), the paper discussed on page II-8 of the Montana brief.

6. Montana Concern #6

Seepage or discharge from the settling ponds could lead to increased nutrients and lower oxygen levels in downstream areas.

B.C. Response

The BCMOE is already pursuing various related questions with the company, including potential nitrogen and phosphorus increases, and their effects on productivity. Particular topics of concern include possible high volumes of pit water, explosives use, algal growth and eutrophication of downstream areas.

7. Montana Concern #7

More information is needed on the organic polymer which is proposed as a tailings coagulant.

B.C. Response

This is a new item, and the BCMOE will be pursuing it with the company.

8. Montana Concern #8

Large volumes of groundwater from pit dewatering and minesite runoff would cause the settling ponds to discharge on a regular basis.

B.C. Response

Effluent discharges from tailings ponds are not an accepted practice in British Columbia, and would not be permitted. The BCMOE is pursuing with the company various questions related to the volume of water to be handled in retention ponds.

9. Montana Concern #9

Based on the settling pond efficiencies reported in the Stage II submission, the annual sediment yield from the minesite would constitute between 3% and 14% of the average annual sediment load in the Flathead River at the International Border. Most of this sediment would be fine-grained, and would eventually enter Flathead Lake. An effluent sediment load ceiling of 50mg/l may not afford adequate protection for downstream areas.

B.C. Response

Estimates of sediment and phosphorus discharge based on pond efficiencies should be discarded, since pond efficiencies would be increased as necessary (by chemical coagulation, for example) to meet provincial effluent standards. Concerns over particle sizes and required treatment are being pursued with the company by the BCMOE.

Discharge estimates based on a 50-mg/l sediment limit will overestimate potential sedimentation, since settling ponds would not discharge all year round. Estimates of sediment discharge during winter low flows are unrealistic because of lower groundwater flows in winter and the probability that suspended sediment in pond effluent would be less than 50 mg/l due to long residence time and exfiltration. Phosphorus discharge estimates would be reduced proportionately, with revised lower sediment estimates. The use of maximum total phosphorus loadings is unrealistic.

..... /6

10. Montana Concern #10

The greatest potential for downstream sedimentation would occur in the post-mining period, necessitating maintenance of mine drainage and settling ponds until acceptable levels could be achieved.

B.C. Response

Sediment ponds should be retained in the post-mining period. Concerns over long-term sediment control related to drainage facilities and reclamation are being pursued by the BCMOE and the BCMEMPR.

11. Montana Concern #11

Recommended sediment monitoring should include a commitment by the proponent and provincial regulatory agencies to monitor sediment discharge and to maintain sediment control into the post-mining period, and to undertake a sediment monitoring program implemented prior to development to demonstrate the performance of the control facilities.

B.C. Response

The BCMOE is already pursuing similar considerations with the company (see also section V, concern #2, below).

V. HYDROLOGY

1. Montana Concern #1

Montana predictions for annual precipitation in the minesite area (using USDA data) are double those presented in the Stage II report, with implications for related drainage design criteria.

B.C. Response

This is not considered to be a valid concern. Montana reviewers erroneously quoted runoff estimates in comparing USDA and proponent precipitation estimates. The Stage II report states that Fernie precipitation records are representative of minesite conditions, and these records approximate Montana precipitation estimates for the minesite.

2. Montana Concern #2

Critical design information for the drainage facilities was not included in the Stage II submission. The anticipated performance of the drainage plan cannot be verified without this information.

B.C. Response

Montana reviewers would have benefitted from access to the 1981 background technical report by Klohn Leonoff Consulting Engineers, which provides some additional information. The BCMOE is itself pursuing with the company the need for further information on peak flows. However, many water management matters cannot be finally resolved until Stage III, when water licence applications are processed. These applications must be accompanied by detailed technical information.

..... /7

3. Montana Concern #3

In general, the Howell Creek floodplain is inadequately defined; any encroachment could cause increased stream sedimentation and channelization.

B.C. Response

The 200-year flood zone should be more precisely defined. This is normally a Stage III exercise.

4. Montana Concern #4

Proposed sediment control measures are inadequate for ditches on steep slopes.

B.C. Response

The BCMOE is already pursuing with the company the possibility that drainage ditches could be unstable and, therefore, a potential source of sediment.

5. Montana Concern #5

Montana recommends that the ceiling for settling pond effluent sediment loads should be reduced from 50mg/l (the British Columbia standard) to 15mg/l in order to protect fisheries in Howell Creek and further downstream. This would then accord with Montana's water quality standards.

B.C. Response

The 50-mg/l standard is the effective Province-wide Waste Management Branch standard. Reduction to 15mg/l may have merit, but data are too sparse along Howell and Cabin Creeks to assess this. It should be noted, however, that the Montana position is based in part on a maximum recorded suspended sediment concentration of 14mg/l in Howell Creek. This value may reflect only the sparse data base. Certainly the Flathead River exhibits fairly high suspended sediment concentrations.

6. Montana Concern #6

Montana recommends that an intensive environmental monitoring program be implemented if the mining plan is approved.

B.C. Response

Monitoring for water quality and other parameters is a normal requirement of any effluent Pollution Control Permit, with specific details finalized at Stage III when the permit is processed. The monitoring program would include components similar to those suggested on pages III-26, IV-7 and IV-13 of the Montana critique.

..... /8

VI. RECLAMATION

1. Montana Concern #1

General concern is expressed over the lack of definition of the reclamation program.

B.C. Response

The B.C. Ministry of Energy, Mines and Petroleum Resources (BCMEMPR) has primary jurisdiction over mining reclamation matters. It routinely expects a conceptual reclamation plan at Stage II, with final reclamation details worked out at Stage III. At that time, a detailed report and review are required as part of the processing of a reclamation permit.

Jurisdiction in this matter is vested in the BCMEMPR under Section 9 of the Coal Mine Regulation Act. As a basic statement of policy, Section 9(1) of the Act reads:

> "It is the duty of every owner, agent, or manager of a mine to institute and carry out a program for the protection and reclamation of the surface of the land and watercourses affected by it and, on the discontinuance or abandonment of a mine, to undertake and complete the program to leave the land and watercourses in a condition satisfactory to the Minister."

The Act requires that a reclamation permit be obtained (under Section 9(5)). The administrative procedures for obtaining a reclamation permit are as follows:

(a) Report

A report is to be submitted (under Sections 9(2) and 9(3)) to the Minister of Energy, Mines and Petroleum Resources prior to the commencement of operations.

The report should contain:

- a map showing the location and extent of the mine, and the location of lakes, streams and inhabited places in the vicinity;
- particulars of the nature of the mine and the extent of the area to be occupied during the probable duration of the mining operation;
- particulars of the nature and present uses of the land to be used;
- a program for reclamation and conservation of the land during, and on the discontinuance or abandonment of, the mining operation, with particular reference to
  - the location of the land;
  - the effect of the program on livestock or wildlife, watercourses, farms, inhabited places in the vicinity of the mine and the appearance of the site of the mine; and
  - the potential use of the land, having regard to its best and fullest use, and its importance for existing and future timber, grazing, water, recreation, wildlife or mineral use.

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(b) Advertising

The company must advertise (under Section 9(4)) that it has filed an application for a reclamation permit. This notice of filing must be advertised in the British Columbia Gazette and a local newspaper. The report, therefore, is a public document.

(c) Review

The report is reviewed (under Sections 9(5) and 9(6)) by the B.C. Advisory Committee on Reclamation which consists of representatives from the Ministry of Energy, Mines and Petroleum Resources and other resource agencies, including the Ministry of Agriculture and Food, the Ministry of Forests, the Ministry of Lands, Parks and Housing, and the Ministry of Environment.

(d) Bonding

Under Section 9(7) of the Act, a bond must be posted in a prescribed amount up to $1,000.00 per acre of disturbed land. These funds are placed in trust and a receipt and agreement form is issued by the bank. Bonding is determined by:

- the amount of land disturbed;
- the degree of difficulty in reclamation;
- the type of land disturbed;
- environmental considerations; and
- the past performance of the company.

(e) Permit Issuance

A reclamation permit is issued with such special terms and conditions as the Minister sees fit to prescribe.

(f) Performance

The surface must be continually and progressively reclaimed (under Section 9(9)), or an additional sum of money must be deposited to provide the funds necessary to carry out the approved program.

2. Montana Concern #2

Reclamation would be difficult on waste dump slopes of 2:1 (26°).

B.C. Response

Other experience in the southeastern British Columbia coalfields has repeatedly demonstrated that revegetation of 26° slopes is readily achievable.

3. Montana Concern #3

End-dumping at slopes of 37° will result in slope failures which could threaten Howell Creek.

..... /10

B.C. Response

The BCMEMPR, as part of its consideration of the company's application for mining plan approvals, will carefully assess the slope stability implications of the end-dumping proposals.

4. Montana Concern #4

A set back of 90 metres from Howell and Cabin Creeks is insufficient for the waste dumps, given aquatic values.

B.C. Response

British Columbia will have to be satisfied that the dumps will be stable before their locations and configurations are approved. Protection of Howell and Cabin Creeks has long been a major concern of the BCMOE and the BCMEMPR, and is a matter which both Ministries intend to continue to pursue vigorously with the company. The Montana expression of concern reinforces British Columbia's own concerns for stream protection and drainage control.

September 14th, 1982.

TED SCHWINDEN
GOVERNOR

State of Montana
Office of the Governor
Helena 59620

December 17, 1982

The Honorable William Bennett
Premier of British Columbia
Parliament Buildings
Victoria, British Columbia V8V4R3
CANADA

Dear Premier Bennett:

Thank you for the detailed response to Montana's comments on the Sage Creek Company's Stage II application. We were pleased that you share many of our concerns.

We recognize that British Columbia utilizes a review process for new coal mine development which, although sharing many objectives similar to Montana's objectives, differs considerably. The State of Montana would like to cooperate with British Columbia and work within the Coal Guidelines framework. When I directed my staff to review the Stage II application, I requested that all significant Montana concerns be addressed. I understood that the Stage II application was the point for the resolution of these issues; it now appears, however, that many issues will not be resolved until the Stage III application, if Stage II is approved.

The State of Montana will hold its concerns in abeyance until a decision on the individual permits is made. This approach will necessitate that British Columbia give timely notice to Montana and continue to provide an opportunity to participate in the review.

Montana appreciates your serious recognition of our concerns. The close proximity of this area to Montana and the extreme sensitivity shown by Montana in the management of our own air, water, fish, and wildlife resources within the North Fork Flathead River drainage heightens the significance of this recognition. I hope as our continue this dialogue both in the resolution of this issue and in future issues which we will face as we continue to meet worldwide energy needs with limited resources. I am somewhat concerned by your statement that British Columbia has only addressed those matters which fall within the limited jurisdiction. As you know, the North Fork of the Flathead River flows through Glacier National Park, a world biosphere and an international peace park, thus necessitating a higher standard of review. I hope that the Coal Guidelines process can provide the mechanism to recognize Montana's special concerns.

As previously stated, the success of any review, planning, or permitting system relies upon both the quantity and quality of data used in making a decision. Enclosed are further comments elaborating upon your response to our concerns and restating concerns which have not as yet been fully addressed.

I have been informed by my staff that the recent information exchange meeting held in Cranbrook, B.C., early in November was highly successful. I believe that by continuing to maintain constant communication and fostering cooperation, we can develop our resources without compromising the integrity of the environment. We sincerely appreciate the opportunity you have afforded us in this review process and look forward to a rapid resolution of the few remaining points of disagreement or misunderstanding.

Sincerely,

TED SCHWINDEN
Governor

Enclosure

cc: Jake McDonald
Dennis McDonald
Robert McClellard
Herb Pakrul
Senator Max Baucus
Ron Cooper

Montana's Review of British Columbia's September 27, 1982 Response Letter: Proposed Cabin Creek Coal Mine

Outline

I. Specific Concerns

   A. Water Quality, Water Quantity, and Hydrology

   B. Air Resources

   C. Reclamation

II. Montana Concerns Not Addressed in British Columbia Response Letter

   A. Wildlife

   B. Stream Depletion

   C. International Aquatic Resources

III. Literature Cited

I. Specific Concerns

A. Water Quality, Water Quantity, and Hydrology

1. Sediment Ponds

Geologic information presented in the Stage II Assessment, including both the hydrology and geology reports as well as other sources, indicates that the geologic structure of the Cabin Creek area contains many layers of fine sediments formed by repetitive glacial ice sheets moving across the area. Minor amounts of this very fine material are highly visible in lakes and streams throughout the Flathead River basin. The proposed mining would disturb those sediments. Unless the tailings and associated settling ponds are made impervious, exfiltration from these ponds could become a source of these very fine sediments, which would eventually reach the North Fork of the Flathead River.

Sediment pond efficiencies of 80 to 97 percent are given for the Cabin Creek Mine drainage network (Klohn Leonoff, 1981). These values are apparently based on the assumption that 80 to 97 percent of the sediment will be larger than .01 mm in size. The remaining 3 to 20 percent of the material which is smaller than .01 mm in size will pass through the system as presented in the Stage II Assessment.

It is true that "chemical coagulation" or flocculation methods may be employed in order to increase pond efficiencies. The effectiveness of these methods depends in part on their consideration in the design phase of the sediment retention facilities. For example, some systems utilize ponds divided into series of overflow cells separated by weirs. The cells provide longer settling times and the introduction of flocculants at the weirs provides for good mixing and distribution. If there is a reasonable chance that chemical coagulation will be required to meet provincial effluent standards, then the sediment detention basins should be designed with their use in mind.

The British Columbia response states that the sediment ponds should be retained into the postmining period. Given the potential for a high postmining sediment yield, the retention and maintenance of the ponds and the mine drainage network would be imperative for the protection of downstream water quality, channel characteristics and aquatic habitat of the North Fork of the Flathead River, [illegible] depend upon the success of slope stabilization, revegetation and other aspects of successful reclamation.

2. Sediment Pond Discharge

Montana maintains that suspended sediment levels discharged from settlement ponds should not exceed 15 mg/l. Stanford et al. (1982) determined that tributaries in the North Fork basin seldom exceeded 10 mg/l suspended sediment during periods of high flows, and normally transported less than 1.0 mg/l during low flow periods based on "grab" samples collected during the year. The highest concentration of suspended sediment they recorded in a tributary was 17.5 mg/l in Quartz Creek during the spring. The only place suspended sediment levels were found in excess of 50 mg/l was in the main river during spring runoff. In review of USGS water quality data collected on the North Fork of the Flathead River at the International Border, it was noted that suspended sediment exceeded 50 mg/l an average of only 31 days (range

9-62) and exceeded 15 mg/l an average of 60 days (range 23-99) for the four years of continuous suspended sediment data collection (USGS 1976-1979). High concentrations (greater than 50 mg/l) generally occurred at flows greater than 28 m^3/sec. The total suspended solids in the river averages approximately 8 mg/l during a 12-month season (Nunnallee, 1976).

Montana's concerns are based on the fact that Howell Creek's flow would not be able to transport sediment discharged from the settlement ponds resulting in deposition of this sediment onto the creek's streambed. A discussion of the harmful effect of this increased deposition could have on salmonid spawning, incubation and rearing is included in Montana's original submittal. Since settling pond efficiencies would be increased as necessary to meet provincial effluent standards (B.C. letter, September 27, 1982, pg. 5), such efficiency increases should be explicitly made to maintain existing quality of international waters.

The standard for water quality evaluation is maximum total phosphorous. It is therefore, a realistic standard to use in evaluating sediment pond efficiencies. Absent the adherence to a discharge standard which reflects streamflow throughout the year, the company would be permitted to contribute this amount of sediment and phosphorous to the stream and river. Standards based upon site specific data should be adopted to alleviate Montana's concerns.

3. Monitoring

Carefully planned water quality and sedimentation monitoring of the area prior to, during, and after mining is in the best interests of the applicant, British Columbia, and the State of Montana. This is especially true because of the rapid nature of land use changes occurring throughout the watershed--most notably, extensive timber harvest. A well designed monitoring program would allow discrimination between sediment or water quality impacts due to mine development and those which may be due to other land uses.

We would recommend that permanent stream gaging and sediment stations be established and maintained at the following locations:

A. Cabin Creek upstream of minesite (upstream of waste dump C)
B. Howell Creek upstream of minesite (in the vicinity of the confluence with Leslie Creek)
C. Howell Creek below minesite (near confluence with North Fork Flathead)

These stations would supplement the existing stream gaging station located on Cabin Creek and the Joint U.S. Geological Survey/Canadian Water Survey Station on the North Fork of the Flathead River at the U.S./Canadian Border. Each of these stations should be equipped to provide a continuous record of stream discharge. In addition, suspended sediment sampling with sufficient frequency to establish daily suspended loads (particularly through the spring run-off period) should be undertaken. It is also recommended that bedload transport be measured at Howell Creek near the confluence with the North Fork station. This would be done using the Helly-Smith bedload sampler and the methods of Emmett (1980). This is important because it would allow the calculations of a sediment budget for Cabin and Howell Creeks. The sediment budget would provide information on the amount of sediment supplied by

Cabin and Howell Creeks to the North Fork as well as the percentage of that sediment which would be derived from the mining operation.

The data derived from monitoring of sediment discharge at the suggested locations used in conjunction with data from inflow and outflow monitoring of sediment detention basins and the tailings pond would provide an accurate means of determining the amount of sediment delivered from the minesite. Monitoring at this level of detail (or greater) is the only method for reliably assessing the impact of the project on sediment loads in the North Fork of the Flathead River.

4. Drainage Plan

The "Drainage plan for Sage Creek Coal, S.E. British Columbia" by Klohn Leonoff has been reviewed. While this report addresses some of Montana's concerns, many of the details required for a complete evaluation of the plan are lacking. For example, a detailed description of ditch design parameters, including geometry of the ditch (triangular, trapezoidal, etc.), width of the ditch and roughness of the ditch is not given. Longitudinal centerline profiles of the ditches are not given. In addition, no information is given which indicates that sediment loading of the drainage network was considered in the design and performance of the contaminated water ditches.

The report relies on a ditch slope of .0015 in calculations of the velocity and depth of flow in both the clean water diversions and contaminated water ditches. This slope is desired so that flow velocities during flood events would be limited to about 1 m/s. This would provide for lower ditch erosion and apparently allow for revegetation of 3H:1V side-slopes on the ditches.

An analysis of the site's topography indicates that longitudinal slopes of .0015 will be difficult to achieve for the proposed contaminated water ditches. To achieve a ditch slope of .0015, substantial cuts (about 50 to 200 feet) into thick glacial till material would be necessary along the centerline of the ditches. This would require extensive earth work and does not seem reasonable from either an engineering or environmental viewpoint. A more likely case is that the initial slope of the ditch would be close to the natural land slope.

Slope is a sensitive variable which is used in the calculation of the hydraulics and sediment transport characteristics of the ditches. Velocity and stream power vary directly with slope. A large increase in slope causes a corresponding increase in velocity and the erosive force of the flow. Without knowing the exact dimensions of the proposed ditches it is not possible to calculate the widths, depths and velocities of flow for the various design floods. It is recommended that these values be calculated using the slope of the existing topography along the centerline of the ditches (as opposed to .0015) and that the design of the ditches be based on the existing slopes.

It is anticipated that using the higher slopes in calculations of the design flood hydraulics of the ditches will result in a shallower depth of flow and increased velocity for the 200-year storm. Resulting velocities may be double or more than the 1.3 m/s value given in the drainage plan. The decreased depth of flow and increased flow velocity will increase the erosive

power of water in the ditch. This is beneficial with respect to the ditches capability to transport supplied sediment, but may be detrimental to stabilizing the ditches and preventing them from becoming sediment sources themselves.

In actuality, erosion along the ditch would be greatest in the steeper upper reaches. The lower gradient reaches, above pond 2, would probably become depositional areas. Sediment deposition in the ditch above the pond could lead to decreased channel efficiency and breaching of containment berms unless the ditch's capacity was maintained by dredging or other means.

It is difficult to say just how much erosion might occur with the available data. If the materials were very coarse, a lag or armor layer might develop which would naturally inhibit further erosion after a couple feet of down-cutting. If the material was finer grained, it is possible that the erosion and head-cutting in the ditch could cause extensive destabilization resulting in substantial (greater than 50 ac-ft) ditch-derived sediment.

The Sage Creek drainage plan recognizes that rip-rap may be necessary to stabilize portions of the ditches. It is recommended that the following methods be considered in design of the ditches:

-- the use of a ditch lining of bituminous concrete, concrete, grouted rip-rap etc. to inhibit erosion

-- the use of check dams to inhibit head-cutting of the ditches

-- the use of gradient-control structures to reduce the velocity of flow in the ditches

It can be anticipated that even with the above measures, extensive maintenance of the drainage network will be required in order to insure proper operation. If sediments supplied by either mining or ditch erosion are allowed to accumulate in the ditches, then breaching or over-topping of containment berms is possible.

B. Air Resources

Montana has developed intensive air quality and meterological data on the Flathead Basin. Although site specific emissions data was not available for Montana's evaluations, site specific meterological and air quality data was used. Montana has not raised a concern regarding violations of air quality ceilings for public health. Rather, Montana's evaluation indicated degradation and violations of standards within Glacier National Park which is managed for near pristine air quality as a "Class I Airshed."

C. Reclamation

The reclamation plan for the mine is very sketchy and remains a concern. Reclamation at the site will be occurring in an area characterized by subalpine conditions. The steepness of slopes (26°) will make the job even more difficult. Although revegetation may have been demonstrated at other southeastern British Columbia coalfields, there is a considerable difference between short-term demonstration of revegetation and long-term reclamation success (Thirgood and Ziemkiewicz, 1978; Thirgood, 1978).

Reclamation of lands disturbed by coal mining at Cabin Creek will surely require a continuous program of careful land and vegetation management. Based on Montana's experience, the expense of reclamation costs will probably greatly exceed the $1,000 bond as required under the Canadian Coal Mine Regulation Act. This is of concern because Montana has required bonds as high as $18,000 per acre and is considering bonds as high as $22,000 per acre for mining of land which is expected to be difficult to reclaim.

II. Montana Concerns Not Addressed in British Columbia Response Letter

A. Wildlife

Montana's initial evaluation suggested that grizzly bears and wolves, as threatened and endangered species, would most likely feel significant impacts from the proposed mining operation. Information presented in Cranbrook, B.C. at the British Columbia-Montana information exchange meeting (November 2-3, 1981) provides additional support for concerns about grizzlies. Current studies indicate a density of 1 grizzly per 6.6 square miles and a litter size of 2.2 for the area. These data seem to reflect excellent habitat conditions, therefore emphasizing the need for management to assure conservation of this unique and productive situation for grizzlies. The data also show that 5 of 6 marked bear mortalities were caused by other than legal hunting. Taken together, these data may be documenting good times for bears at present, while at the same time predicting less favorable mortality trends as the region is used and habitated by humans.

It is also important to note that the effects of natural resource exploitation on grizzlies has been documented under similar conditions elsewhere. A study conducted in the Swan Hills of Alberta revealed the scenario of a declining population as the landscape was developed. Montana's original analysis pointed to the possibility of a similar scenario as the minesite developed and logging practices continue unabated. The wolf issue should be treated at the same time since their response to regional development has apparently been felt.

Beyond the treatment of individual wildlife species is the consideration of regional terrestrial ecosystem needs. Maintaining the natural integrity of park environments is an issue which extends beyond park boundaries. Movement data clearly demonstrates that grizzlies are not confined to parklands and empirical analyses show that other species (such as white-tailed deer) follow similar patterns. The U.S. Forest Service is proposing to establish that portion of the forest on the west side of the North Fork and adjacent to the Canadian border as a special management area for grizzly bears in recognition of the importance of this area for survival of this already threatened species. It follows that impacts adjacent to protected wildlife habitats will be felt by wildlife within those sanctuaries. At the same time, the sanctuaries may contribute harvestable animals to adjacent lands through emigration. It is therefore clearly in the best interest of all management entities in the North Fork area to consider the regional needs of wildlife, especially those species with large home ranges.

B. Stream Depletion

The State of Montana's original letter of concern mentioned the possible stream depletion effects that may occur where dewatering must be done in the Quaternary sediments where the edges of the two pits are in close proximity to Howell and Cabin Creeks. Neither the Dames and Moore (1976) nor the Pacific Hydrology (1981) reports are very enlightening about the nature of the Quaternary sediments or the necessary dewatering effort that would occur when each pit intercepts these deposits. Pacific Hydrology (1981) estimates the contribution of flow into the pits from these sediments to be about equal to that flowing into the pit from fractures in the consolidated bedrock (p. 4-6). Since no investigations have, as yet, been focused on the Quaternary sediments, it is impossible to confirm the basis for (or accuracy of) this

estimate. Pacific Hydrology (1981) recommends further investigations into the hydrologic properties of the Quaternary sediments (p. 5-2), and it is concurred that Stage III investigations should include a study of this type.

Such a study should include an assessment of surface-ground water interconnections between the area to be dewatered and Howell and Cabin Creeks. If the likelihood of depletion, by induced infiltration from adjacent portions of these streams is substantial, then an attendant limnological study should be initiated. This study should focus on, among other things, the ability of spawning fish to pass this reach at a lower stage induced by long-term dewatering of the underlying sediments.

C. International Aquatic Resources

International fisheries have not been addressed. It is assumed that this resource is presumed to be protected through maintaining water quality at provincial standards. This resource needs to be addressed directly and the standards evaluated against aquatic insect and fisheries needs to insure their protection.

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Province of
British Columbia
OFFICE OF THE MINISTER

Ministry of
Energy, Mines and
Petroleum Resources

Parliament Buildings
Victoria
British Columbia
V8V 1X4

June 24, 1983.

The Honourable Ted Schwinden,
Governor of the State of Montana,
Helena, Montana.
U.S.A. 59620

Dear Governor Schwinden:

My purpose in writing is to respond on behalf of Premier Bennett to your December 17, 1982 letter and the attached comments on British Columbia's earlier (September 27, 1982) correspondence. The latter had been forwarded to you by my predecessor, the Honourable Brian R.D. Smith.

I thank you for Montana's continued interest and constructive commentary on the Sage Creek project. Moreover, I wish to echo Mr. Smith's sentiments, and to reaffirm British Columbia's intention to keep Montana advised of progress with project review.

In keeping with this intent, I feel that it would be useful to bring you up-to-date on our thinking with respect to some of the points raised in your December 17, 1982 correspondence. As before, British Columbia's comments have originated from the B.C. Ministry of Environment and my own Ministry. I attach them for your information.

British Columbia is currently involved in an extensive examination of the Sage Creek project, and it is expected that the Environment and Land Use Committee will be in a position to consider the question of Stage II approval-in-principle in the near future. We will keep you advised on our progress in this regard.

. . . / 2

In closing, I wish to thank you once again for your continued interest in environmental aspects of this project. Please contact me if you have any further questions or comments.

Yours truly,

Stephen Rogers,
Minister of Energy, Mines
and Petroleum Resources.

cc: The Honourable W.R. Bennett,
Premier.

The Honourable A.J. Brummet,
Minister of Environment.

Mr. J.D. McDonald, Chairman,
Coal Guidelines Steering Committee.

Mr. L.H. Hunter, President,
Sage Creek Coal Ltd.

COAL GUIDELINES REVIEW PROCESS

SAGE CREEK COAL PROJECT

STAGE II SUBMISSION

(Nov. 1981/Jan. 1982)

BRITISH COLUMBIA RESPONSE TO DECEMBER, 1982
REVIEW COMMENTS ON MONTANA

I. MONTANA CONCERNS PREVIOUSLY ADDRESSED BY BC IN SEPTEMBER, 1982

A. SEDIMENT PONDS

1. Montana Concern #1

"...Unless tailings and settling ponds are made impervious, exfiltration from them could become a source of fine sediments, which would eventually reach the North Fork of the Flathead River..."

B.C. Response

Experience with existing coal mines in the Southeast Coal Block shows that exfiltration from settling ponds can be effective in preventing sediment from reaching the receiving environment. Filtration of settling pond effluent through the soil is an effective approach to removal of suspended sediment.

However, exfiltration from tailings ponds should not normally be condoned because in any event, there will be a need for a reservoir which can be used to recycle water and nitrogen from explosives use. Detailed design of tailings and settling ponds would normally be addressed at Stage III.

2. Montana Concern #2

"...If there is a reasonable chance that chemical coagulation will be required to meet provincial effluent standards, then the sediment detention basins should be designed with their use in mind...."

B.C. Response

It is agreed that chemical coagulation facilities should be included in the design of the settling ponds. This matter is normally addressed during the detailed design phase at Stage III.

3. Montana Concern #3

"...The B.C. response of September, 1982 states that sediment ponds should be retained into the post-mining period. Retention and maintenance of sediment ponds and the mine drainage network into the post-mining period would be imperative for

protection of downstream water quality, channel characteristics and aquatic habitat of the North Fork of the Flathead River..."

B.C. Response

It is agreed that the ponds must be retained into the post-mining period for as long as is necessary to achieve successful mine reclamation. This point would be addressed at Stage III.

B. SEDIMENT POND DISCHARGES

1. Montana Concern #1

"...Montana maintains that suspended sediment levels discharged from settling ponds should not exceed 15 mg/l. Montana's concerns are based on the fact that Howell Creek's flow would not be able to transport sediment discharged from the settlement ponds, resulting in deposition of this sediment onto the stream bed. Since settling pond efficiencies would be increased as necessary to meet provincial effluent standards (September, 1982 B.C. response), such efficiency increases should be explicitly made to maintain existing quality of international waters..."

B.C. Response

It is agreed that the concentration of suspended solids (and associated phosphorus - see following point) which is to be permitted in sediment pond effluents should be considered further at Stage III. Given the documented sensitivity of Howell Creek, B.C. is cognizant of Montana's suspended solids concerns, and will be pursuing these matters at Stage III if Stage II approval-in-principle is granted. Concentrations should be established so as to meet the provincial receiving water quality objectives which will be established for Cabin Creek, Howell Creek and the Flathead River.

Montana's contention that suspended solids discharged from settling ponds may be deposited on the stream bed is questioned. If the sediment will not settle in a quiescent pond, it will not likely settle in a flowing stream.

2. Montana Concern #2

"...Sediment pond discharge standards based upon site-specific sediment and phosphorus data should be adopted to alleviate Montana's concerns..."

B.C. Response

B.C. reviewers found this paragraph (p. I-2, paragraph 3) confusing as worded; however, they agree that discharge limits should be based on site-specific data. This point would be addressed at Stage III.

C. MONITORING

1. Montana Concern #1

"...A well-designed water quality and quantity monitoring program should be carried out to allow discrimination between impacts due to mine development and those which may be due to other land uses..."

B.C. Response

It is agreed that a monitoring program similar to that recommended by Montana will be necessary to assess the effects of the project on the receiving waters. B.C. has reviewed Montana's suggested monitoring program, and will pursue this matter further at Stage III if Stage II approval-in-principle is granted.

2. Montana Concern #2

"...Montana recommends that permanent stream gauging and sediment stations be established and maintained at Cabin Creek above the minesite, at Howell Creek above the minesite, and at Howell Creek near its confluence with the Flathead River. Each of these stations should be equipped to provide a continuous record of stream discharge..."

B.C. Response

Hydrometric stations are currently operating along Cabin Creek near the mouth, along Howell Creek above Cabin Creek, and along the Flathead River at the International Border. While B.C. agrees with the principle of monitoring streamflow above and below the disturbed area for purposes of assessing the suspended sediment regime, it questions whether continuous discharge recorders are needed at all of the additional sites which are proposed by Montana. In any event, the location and method of hydrometric sampling would be addressed at Stage III.

D. DRAINAGE PLAN

1. Montana Concern #1

"...Montana has reviewed the 1981 background technical report on the proposed drainage plan. While this report addresses some of Montana's concerns, many of the details required for a complete evaluation of the plan are lacking. Montana is still concerned that drainage control ditches are not adequately designed to minimize erosion and sedimentation..."

B.C. Response

It is agreed that all drainage ditches will have to be designed, constructed and maintained so that sediment discharge is minimized. Detailed design of drainage works is usually part of the Stage III water licencing process. The design methods which are recommended by Montana may not be feasible in all instances, but

B.C. will pursue this matter further at Stage III if Stage II approval-in-principle is granted. Various options to prevent erosion could be included as requirements of the water licence under "land management" purposes. Furthermore, consideration would be given to requiring that interceptor ditches pass through settling ponds prior to discharge.

E. AIR RESOURCES

1. Montana Concern #1

Montana reiterates its concern regarding the possible detrimental effects of the project on air quality within Glacier National Park.

B.C. Response

At this time, B.C. has nothing to add to its September, 1982 response on this matter.

F. RECLAMATION

1. Montana Concern #1

"...Montana repeats its concern that the mine reclamation plan is sketchy. In addition, reclamation bonding appears to be undervalued..."

B.C. Response

In general, B.C. agrees that a good reclamation plan should be in place prior to development, and that adequate funding should be available to implement it. B.C. does not share Montana's pessimism with respect to the degree of difficulty involved in the reclamation of 26° slopes.

II. MONTANA CONCERNS NOT ADDRESSED BY B.C. IN SEPTEMBER, 1982

A. WILDLIFE

1. Montana Concern #1

Montana again expresses concerns over possible project impacts on international wildlife populations (in particular, on grizzly bears and wolves), and emphasizes that the regional needs of wildlife should be considered in designating future land use. The U.S.A. is proposing special management areas and strategies for these species.

B.C. Reponse

B.C. shares Montana's concerns for international wildlife populations. The B.C. Ministry of Environment has, in its Stage II review for the Coal Guidelines Steering Committee, detailed what it perceives to be the social, economic and biological significance of these resources to B.C., their trans-boundary relationships, the potential wildlife impacts of the Sage Creek Coal

Project, and the deficiencies in the company's Stage II wildlife assessment.

If the project is approved, wildlife impact management measures will be applied (mitigation and/or compensation, as appropriate), involving such items as mine design, employee controls, refuse site controls, and perhaps also habitat improvement.

B. STREAM DEPLETION

1. Montana Concern #1

The most important outstanding concern of Montana regarding groundwater aspects of the Stage II submission is the possible effect which pit dewatering may have on stream depletion. Montana considers that Stage III should include an assessment of surface groundwater interactions between the area to be dewatered and Howell and Cabin Creeks.

B.C. Response

B.C.'s September, 1982 response noted Montana's concern over possible stream depletion, and indicated that it would pursue the matter with the proponent. Subsequently, it gave direction to the proponent on the further groundwater investigations which were necessary to satisfy Stage II requirements. The proponent subsequently provided a Stage II addendum which addressed the possible effects of mining on streamflows and fisheries in addition to other groundwater topics.

B.C. considers that the addendum report has satisfied its outstanding Stage II requirements with respect to detwatering potential. Based on available information, it appears that pit dewatering is likely to exert only a minor unfavourable influence of streamflow volumes, and no significant effect on either the spawning or rearing capability of Howell Creek. During Stage III, a monitoring program would be established to observe the effects of pit dewatering on groundwater regimes. According to the current mine plan, pit development would not reach a depth below creek level until year 6. During this period, considerable groundwater data could be gathered for use in further evaluations of the impacts of mining on groundwater and streamflow regimes.

If Montana has not received a copy of the groundwater addendum, B.C. will arrange through the company to make it available.

C. INTERNATIONAL AQUATIC RESOURCES

1. Montana Concern #1

"...International fisheries have not been addressed directly. Montana presumes that the B.C. approach is to protect this resource through maintaining provincial water quality standards. The standards need to be evaluated against aquatic insect and fisheries needs to insure their protection..."

B.C. Response

As in the case of international wildlife concerns (see item IIA, above), the B.C. Ministry of Environment shares Montana's concerns for international fisheries, and has conveyed this concern to the Coal Guidelines Steering Committee.

June 1st, 1983

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 82/1041

JUL 1 1982

Mr. Robin Porter
Environmental Officer
Office of Canadian Affairs (EUR/CAN)
Department of State
Washington, D.C. 20520

Dear Mr. Porter:

We have had an opportunity to review a copy of Sage Creek Coal Limited's Stage II Environmental Assessment. Since the project is in Canada, we have not sought to judge it by U.S. criteria but, rather we have focused on possible impacts to those resources which are either under our jurisdiction or of particular concern to us. Our review indicates the distinct possibility of water quality degradation in the Flathead River south of the International Boundary, air quality degradation in Glacier National Park and adverse effects to threatened or endangered wildlife species. We believe that the Canadian government will share our concern in this regard.

Glacier National Park forms the U.S. portion of the Waterton-Glacier International Peace Park, established by the governments of Canada and the United States. Most of Glacier National Park has been proposed for wilderness designation, including the North Fork area adjacent to British Columbia. In addition, Glacier and Waterton have been designated International Biosphere Reserves and as such are marked for protection under the United Nations Educational, Scientific and Cultural Organization program. Biosphere reserves are used to study environmental changes, provide havens for plant and animal communities, and protect gene pools to safeguard the genetic diversity of species on which their continuity evolution depends.

The east half of the North Fork of the Flathead River lies within Glacier National Park, forming the park's western boundary. The Flathead River in the United States was designated a wild and scenic river by Congress in 1976 and placed under joint administration by the Secretary of the Interior and the Secretary of Agriculture. The Flathead River was so designated based on its free flowing characteristics and outstandingly remarkable values including its scenic, recreational and fish and wildlife values. The intent of the designation was to preserve the river and its immediate environment in the condition in which it existed at the time of its designation.

The close proximity (approximately six miles) of Glacier National Park and designated wild and scenic segments of the Flathead River to the mine gives us concern for these resources due to potential adverse impacts from mine development and operation. Based on the results of the five-year Flathead River Basin Environmental Impact Study funded by the Environmental Protection Agency, the State of Montana has provided the Canadian Government with over 100 pages of documented technical comments on the proposed mine and environmental assessment with respect to impacts on the U.S. side of the international boundary. The staff of Glacier National Park participated in the impact study, working closely with the Montana study team to insure adequate assessment of our concerns; and we fully endorse the State's comments where they apply to our areas of jurisdiction.

Howell Creek, which is encompassed by the mine site, provides spawning sites for nearly 10% of the Flathead drainage bull trout population. A protracted change in water quality and/or streamflow characteristics may hasten a decline in this resource. Information presented in the Stage II assessment supports an expression of concern over the potential for addition of toxic elements (e.g. heavy metals, barium), nutrients and sediments in surface waters. Groundwater degradation is also possible. These issues alone point to a potential for significant changes in the relatively pristine environment of the North Fork.

The air quality analysis does not address potential adverse impacts to air quality related values (AQRVs) other than visibility from the proposed mine site. It should evaluate how other AQRVs (e.g. vegetation and wildlife) within Glacier could be affected by emissions from the project. The assessment should specifically address potential air quality and visibility impacts on Glacier National Park.

The analysis should specify (1) the exact type of box model used to conduct the evaluation of emission impacts, (2) the stack height and emission parameters assumed, and (3) the assumptions made regarding particle size distribution. Without this information, it is impossible to determine if the SO_2 and TSP concentration estimates were properly calculated.

Based on the information presented in Table 4.2.2-3, the assessment does not evaluate the impact of the coal project's emissions on all relevant U.S. air quality requirements. From our experience in reviewing numerous new source permits, we have found that the U.S. 24 hour SO_2 increment ($5ug/m^3$) is typically more restrictive than the 3 hour SO_2 increment ($25ug/m^3$) that was analyzed in the assessment. Thus, the air quality portion of the assessment needs to be expanded accordingly.

We believe that the baseline background visual range is considerably greater than the 50 km calculated. Our experience indicates that for Glacier National Park and vicinity, this figure is in excess of 100 km. This apparent underestimation would downplay the potential impacts that the coal project could have on visibility. Given the extreme visual range, even some small incremental additions of TSP become significant to reviewers.

We are concerned about potential impacts from this project to wildlife species that are listed as endangered or threatened under the United States Endangered Species Act and range across the Canadian/United States border. These species include the grizzly bear, listed as threatened, and the gray wolf, bald eagle, and peregrine falcon, all listed as endangered. We believe impacts of the proposed mine will occur primarily to the grizzly bear and gray wolf.

Recent analyses of the present status of the grizzly population in northwestern Montana (Northern Continental Divide Grizzly Bear Ecosystem) indicate that the population is heavily impacted by human-caused mortality and that the present level of annual human-caused mortality may be approaching or exceeding the theoretical tolerance limits for this population. Thus, recruitment from the Canadian segment of the Flathead Valley grizzly population may have an important role in the recovery of this species as management on the U.S. side strives to reduce the degree of human-caused mortality to the extent possible. Impact of the proposed mine on 12 to 16 percent of the Canadian segment of the Flathead Valley grizzly population as indicated in the assessment may seriously affect population recruitment and mortality rates for both the Canadian and U.S. segments of the grizzly population.

The environmental assessment indicates that specific mitigation and management measures will be developed during Stage III. We encourage the Canadian government to require and strongly enforce apropriate mitigation measures designed to: 1) minimize human/bear conflicts; 2) prevent illegal human-caused grizzly mortalities; 3) protect important grizzly bear habitat components from adverse modification or destruction; and 4) allow grizzly use of these important habitat components. As identified in the Stage II EA, proper garbage storage and disposal will be an extremely important management function to avoid people/bear conflicts. We suggest that consideration be given to fenced solid waste collection sites and use of bear-proof refuse containers.

Impacts to the gray wolf will result primarily from alterations in numbers and distribution of their prey and from increased human access increasing the potential for human-caused mortalities. In the absence of reintroductions, recovery of the gray wolf in the U.S. depends largely on natural recruitment of wolves from Canadian populations. Providing a movement corridor free from conflict situations and reducing or eliminating human-caused mortalities on dispersing wolves so that pack formation can occur in Montana are significant factors to successful wolf recovery. We ask that the Canadian government recognize the significance of the North Fork Flathead Valley in wolf recovery objectives in the U.S.; mitigation measures similar to those cited above for the grizzly bear would minimize the impacts of the proposed mine on the gray wolf.

In conclusion, while it is not possible to determine from the information presented in the assessment to what extent the project actually will adversely impact resources in the United States, there are enough uncertainties or omissions in the data and analysis to give us serious concern. We are encouraged by the efforts on the part of the applicant to identify possible impacts and consider these in the project design. Based on our extensive experience on similar projects in the U.S., we are certain that the project can be modified to meet our concerns and still go forward. Our professional staff is available to assist as needed in the areas where we have expressed concern.

We would appreciate the opportunity to participate in subsequent reviews of this project. At least five (5) copies of any review document should be supplied to this office so that we can coordinate the interior review with the U.S. Fish and Wildlife Service, National Park Service, Office of Surface Mining, and Geological Survey.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review

SPECIFIC COMMENTS

The applicant proposed to construct several sediment ponds and one tailings pond. These ponds are to be constructed to a 50-year-flood standard. The design of the dams and spillways appear to be adequate for the environmental conditions in the area, however, it appears that none of the ponds are planned to be lined.

The tailings pond will be located just south of the plant site and a short distance west of Cabin Creek. The contaminated water drainage system encompasses the plant site and the company plan calls for discharging contaminants such as chemicals, salts, kerosene and oils into the drainage system which routes this material to the tailings pond.

The tailings pond will be constructed on and from the fluvial-glacial soils in the area. According to the plan these soils consist of well sorted gravels and sand. If the tailing pond is constructed of this material and if the pond is located on this material without a special liner the potential for the contaminants to seep from the tailings pond, through the fluvial-glacial soil is high. Thus, the significance of the impact from these contaminants to Cabin Creek and to the Flathead River will be dependent upon the volume and chemical make-up of the contaminants channeled to the tailing pond. The Stage II assessment lacked sufficient data to determine the potential significance of the impacts resulting from the contaminants in the tailings pond. May we suggest that this pond either be lined or the type and volume of contaminants dumped into the tailing pond be strictly regulated.

Page 2-8 - We note that waste dumps B, C, D, and E have extensive frontage on both Cabin and Howell Creeks and that the tailings pond and Pond #1 have direct drainage routes to the Flathead River. We are concerned that if flooding should occur, or overflow be released, that contaminants will enter the Flathead River. A significant change in the pH of the Flathead River could affect spawning runs of Kokanee salmon and subsequent use of the system by migrating bald eagles. Will these ponds be sealed?

Page 2-19 - We are concerned about potential sediment run-off moving from truck Waste Dump D to Howell Creek and Waste Dump C to Cabin Creek. What size rock will be dumped and will it be of round or angular configuration?

Page 2-25 - Will the coal burning dryer contribute to acid rain problems?

Page 2-29 - Will sewage effluent seep into the Flathead River?

Pages 2-33 and 34 - We recommend that bridges instead of culverts be installed where fisheries are present or erodible stream bottoms occur.

Page 2-39 - We note that pond efficiencies are estimated at 80-97 percent. Does this mean the other 3-20 percent of effluent will defuse into the Flathead River system?

Page 2-40 - How will snowfall and rain water accumulation effect tailing pond capacities?

Page 2-41 - When selecting structures for stream crossings, we recommend that first preference be given to bridges followed by temporary bridges, bottomless culverts, and culverts.

How will dumps be cleaned of debris? We recommend that draglines and not caterpillars be used in streambeds.

Page 2-44 - How will ice effect the operation of sediment and tailing ponds?

Page 2-46 - What preventive measures will be taken to protect water ditches or prevent contaminated waters from being swept away by high runoff flows?

Page 2-47 - Are other stream crossings protected by gutters and/or water ditches?

Pages 3-34 and 35 - If Howell Creek should relocate itself during the life of the mine, what precautions have been taken to prevent ditches and waste dumps from being eroded?

Page 3-36 - How will artesian wells effect sediment and tailing ponds, waste dumps, ditches, and retaining dams?

Page 3-74 - Bull trout and Westslope cutthroat trout are considered as imperiled fishes in the Flathead River drainage by the Fish and Wildlife Service.

Page 3-98 - Cabin and Howell Creeks appear to be wildlife corridors and any continuous human activities in these areas may affect wildlife movement even if habitat were to remain undisturbed.

Page 4-11 - Is any change in the pH of Howell, Cabin Creek or the North Fork Flathead River expected as a result of acid rain? We recommend that base line acid rain data be collected before active mining begins with continued monitoring during active mining years.

Pages 4-16 and 17 - How long before revegetation efforts begin? Lack of vegetation may cause greater than anticipated run off.

Are sediment and tailing ponds, waste dump ditches, retaining walls, bridges, and culverts equipped to handle excessively high flows?

Page 4-26 - How much will suspended solids increase?

PRESENTATION OF

Seth C. Hunt

Acting Regional Administrator

TO

U. S. SENATE SUB-COMMITTEE
ON TOXIC SUBSTANCES AND
ENVIRONMENTAL OVERSIGHT, SENATE
COMMITTEE ON ENVIRONMENT
AND PUBLIC WORKS

KALISPELL, MONTANA

July 6, 1983

PRESENTED TO: U. S. SENATE SUB-COMMITTEE ON
TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT,
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
Kalispell, Montana, July 6, 1983

Mr. Chairman, Senator Baucus -

Thank you for the opportunity to appear before your committee and to offer some of the Environmental Protection Agency's perspectives on environmental issues related to the Flathead Basin and its magnificant environmental resources. We greatly appreciate the concern you are expressing for the protection of this environment by your holding of these hearings here today. We continue to appreciate your, and especially Senator Baucus's long-term and continuing support for the protection of this area.

We do not intend to dwell on the great beauty and high quality environment of the Flathead Basin because we are sure you are already most familiar with these. Besides, what words could really do justice to an area crowned by a Flathead Lake, a Glacier Park and a Bob Marshall Wilderness Area?

Also, we do not intend to speak in depth to the exact composition and nature of these environmental resources. The Flathead Basin Study has generated a very comprehensive catalog of this information and several of the highly qualified scientists who participated in its gathering and interpretation will speak to you later on these matters.

What we would like to address is the worth of the Flathead Basin Study itself and, second, offer some observations on the threat to the environment of this area posed by the Cabin Creek Coal Mine.

It's been over five years now since the Environmental Protection Agency was ordered by the Congress to conduct the Flathead Basin Environmental Impact Study. We have learned a great deal from this effort, both of a scientific nature and of the type more related to the conductance of public affairs. We sincerely believe the Study has been of immense value - it has gone far toward setting a firm foundation for protection of the environment of the beautiful Flathead country - it has been money well spent by the Congress, through our Agency, in pursuit of this goal shared by so many in Montana and around the nation.

One unique aspect of the Flathead Basin Study, and one of its strengths, is the fact that it has generated important background information on the environment and its inner-workings before any major projects such as the Cabin Creek proposal are actually developed. Obviously, we are dealing with an environment already greatly altered by man's activities - activities which have had very substantial cumulative impacts - Hungry Horse Dam, thousands of miles of roads, large scale timber harvest, etc., - but now we are in a much better position to actually plan for and set up mitigation for major impacts before they go beyond the approval stage.

In other words, we are far in front of the so-called "power curve" in the Flathead Basin. This is not the typical situation and the Congress and the Flathead area people who originally pushed for the Study deserve credit for their foresight.

A second unique aspect of the Study has been the Steering Committee approach to its management. As you know, although EPA was ordered to conduct the Study, the idea for the effort came through Flathead area citizens and through Senator Baucus, then a member of the House of Representatives. Roger Williams, then Deputy Regional Administrator of the EPA, in consultation with then Lt. Governor Ted Schwinden, decided to tap this great local interest and expertise through creation of the fourteen member Committee.

EPA's agreement with the Steering Committee was that it, the Committee, would make all funding decisions - what studies were to be undertaken - as long as they were compatible with the expressed intent of Congress and the various Federal regulations. The success of the Steering Committee in carrying out this mandate is a real tribute to citizens and local government interests. Although EPA and the Steering Committee have had their share of misunderstandings, and times were not always easy, we are quite pleased with this groups' performance.

Several years ago we held a dinner honoring Leland Schoonover, the first Chairman of the Steering Committee. "Schooney" died several weeks later, but the Study was off to a sound start toward his goal of helping preserve his beloved Flathead country. EPA's Regional Administrator, Alan Merson, made a keen observation that evening about never ceasing to be amazed by how people of talent and dedication rose out of the local level when a job needed to be done. Nothing more truthful could be said about, not only Schooney, but also about the many people representing diverse interests who served on the Steering Committee. If the Flathead Study is of long-term value it will be because of the involvement of citizens, industry, and local/State/Federal agencies who must live in the Basin and work for its protection on a day to day basis.

Third, we believe the Steering Committee made a wise decision when it made its selections on who would conduct the various studies. The emphasis on selecting outstanding scientists who had long-term knowledge and commitment to the study area was a wise move. This will help assure the practicality and actual utilization of the store of information and understanding that has been gathered.

Last, we would congratulate the Flathead area's elected representatives and Governor Schwinden for their support in creating the permanent Flathead Basin Commission. This Commission will be an important tool in seeing that our five year effort is utilized and that it fits logically into the on-going and future study efforts that will occur.

Now, turning to the proposed Cabin Creek Coal Mine.

It is indeed unfortunate that a large deposit of high-grade coal has to be located in a wild mountain valley with an environment so little spoiled it can boast of the grizzly bear, the timber wolf, and the Congressionally designated Wild and Scenic North Fork of the Flathead River. However, though we can do nothing about the location of this coal, we can do much to influence our Canadian neighbors decision on how and if to mine it.

These efforts to negotiate with the Canadians are not, however, an activity over which the Region VIII Office of the EPA has authority. These matters are appropriately under the jurisdiction of the Congress and the Department of State. We are most encouraged that your Senate Committee understands the importance of Canadian activities to the Flathead Basin and hope the issue can be resolved. Our remarks will be confined to the specific environmental issues posed by the proposed mine.

We will begin with several general observations. First, the Flathead Basin Study has been underway for some five years, resulting in a complete understanding of the North Fork ecosystem, and this information has been freely exchanged with the Canadians. Hopefully, this has meant a much more cautious attitude on the part of the British Columbian government on approval of the mine. In contrast, we had little information on U. S. impacts related to the Poplar River Power Plant across the border in eastern Montana until after the plants were actually constructed. This has obviously not been the case with Cabin Creek.

Second, we will not deal with the intricacies of the scientifically generated data on the North Fork area. There are several highly qualified researchers here today who can better speak on those subjects. We will, instead, attempt to highlight the major potential impacts. We have attached a copy of EPA's comments on Sage Creek Coal's Stage II application and environmental impact analysis as an addendum to these remarks.

Our summary of the potential Cabin Creek Coal Mine impacts includes the following:

1. Water Quality: Almost 5000 acres of erosive mountain land will be disturbed in an area of high precipitation and known severe storm events. There will also be large wastes dumps and tailings ponds. There will be a very real, long-term threat from sedimentation in the North Fork and eventually Flathead Lake.

   Sediment and accompanying phosphorous could have impact on the whole Flathead Lake system, a phosporhous limited system. The project could also add significant levels of nitrogen via "blasting".

2. Fisheries: The mine site is also the site of the North Fork's most important bull trout (Dolly Varden) spawning area - the lower end of Howell Creek. This area could very well be lost with the placing of a very large mine adjacent to it. Also, increased sediment loads could have severe impacts all the way to Flathead Lake.

3. Air Quality: Montana Air Quality Bureau model runs reveal a potential violation of the Glacier Park Class I visibility standard. Though ambient air quality standards would probably not be violated, there would be degradation of the pristine air resource.

4. Wildlife: Though under the jurisdiction of other State and Federal agencies, we would point out that the potential industrialization of the North Fork Valley via a large coal mine will probably have wildlife impacts. The probable loss of the United States' only wolves in this area (a pair have been verified in this area in the winter of 1981-82) and the further isolation of the Glacier Park grizzly bear population are two examples.

5. The Future: The mine could be expanded beyond its 21 year life - potentially right under Howell Creek. There is other coal in the area. With the set investments in road, powerlines, process equipment, and work force, future and continued industrialization of the area is a real possibility.

In light of these important environmental concerns we believe it is essential that we learn from our Canadian neighbors their current plans for this project and in particular, we need to be apprised in detail of the specific steps they will take to prevent the potential environmental dangers that could result from its implementation.

On the more positive side, we would be remiss if we did not point out that a great deal of time and effort has gone into studying the environment and mitigation measures by the Canadians - both Sage Creek Coal and the British Columbia government. We strongly support their proposals for an environmental reclamation fund and for a willingness not to divert Howell Creek as was once planned.

In summary, we believe the mine will probably lead to some level of long-term degradation of the North Fork River, and possibly Flathead Lake. Sedimentation and enrichment of the waters will take place, spills and failures will undoubtedly happen, human pressures will increase, wildlife habitat and wilderness values will be lessened, this, even with the best of mitigation. The relatively unspoiled and pristine nature of this wild country will change and the United States side could suffer environmental losses.

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In closing, we would point out that Canadian activities are not the only threat to the Flathead Basin. Much is occurring on the U. S. side and much more will be proposed in the future that will impact the environment. We must continue to take a basin wide view, to work for proper planning and regulation at all levels of government and to continue the spirit of cooperation and local concern exemplified by the Flathead Basin Environmental Impact Study.

Thank you.

ATTACHMENT

EPA Comments on Sage Creek Limited
Stage II Environmental Assessment

(1) EPA's five year and 2.5 million dollar Flathead River Basin Environmental Impact Study was ordered by Congress because of perceived threats to the integrity of the Flathead River Basin from resource development. One of the major threats has always been perceived as that imposed by the Sage Creek Limited mine proposal.

An immense amount of scientific research has been conducted on the United States portion of the basin by well qualified researchers to better understand and to quantify the water quality, biological, sedimentation, air quality, fisheries, economic, and other factors involved. This research has been conducted in order to gain an understanding and to protect the outstanding environmental values of the Flathead Basin.

The major potential off-site impacts of the Sage Creek Limited proposed mine and accompanying road, power line, and other facilities will be in the United States. For these reasons it is disturbing that the Stage II Environmental Assessment makes only passing reference to only one of the Flathead Basin Study research projects - the fisheries work of the Montana Department of Fish, Wildlife and Parks. No mention is made of Dr. Jack Stanford and his associate's extensive research on limnological aspects conducted at the University of Montana Biological Research Station, Dr. Johnny Moore's sedimentation study conducted from the same facility, the air quality and meteorological work in the North Fork Valley by the Montana Air Quality Bureau, or the economic value study of the Flathead River and Lakes by Dr. Ronald Sutherland and the Montana Department of Fish, Wildlife and Parks.

The above studies were undertaken specifically with North Fork resource development, including coal, impacts in mind. They were undertaken to protect and manage United States environmental resources. All research results and research personnel have been made available for use in the Sage Creek Limited environmental assessment effort.

The researchers listed are currently reviewing the Stage II application. Their comments will be included with those from the State of Montana. We can only state our support of these competent individuals and research team and hope the Canadian applicant gives close scrutiny to their critique of the Sage Creek Limited proposal.

(2) Water quality impacts, particularly that resulting from sedimentation, is a major concern related to the coal mine proposal and the 2,000 + hectares of land disturbance involved. The water quality values of the North Fork Flathead River are verified by its status as a stream classed under our Wild and Scenic Rivers Act. However, more is at stake than the North Fork because the health of Flathead Lake itself is very dependent on the maintenance of the quality of its tributary waters.

Researchers funded under the Flathead River Basin Study now possess a broad understanding of and have quantified the water quality of the North Fork and Flathead Lake. They have also developed a great amount of understanding of the aquatic organisms and the dependent fisheries which are so closely related to the present level of water quality.

We know that sedimentation is closely related to the eutrophication status of Flathead Lake. We also know that Flathead Lake is a phosphorous limited lake and that this P is closely related to sediment. For these reasons, plus the well known impact of sediment on aquatic life in streams, we are very concerned about the effects of increased sediment levels due to large scale land disturbance from the proposed mine.

The Stage II Environmental Assessment states that the "effects of sediment in Cabin and Howell Creeks and the Flathead River due to construction or operation are expected to be minimal" (p.4-26). Numerous other examples can be found in the assessment where we are assured that sedimentation impacts will be minimal. What is not found, however, is any estimate or calculation of actual sediment quantities that might be expected.

The only quantified estimate of sediment resulting from the project is found on page 2-39 and those figures are only for sediments that will go to the sediment ponds. Apparently, statements such as "ditches and settling ponds established at the start of construction will control runoff, thereby minimizing potential sedimentation of streams" (p. iii); and "construction practices and reclamation will maintain water quality of streams along the haul road" (p. iv) negate the need for any further attempts at quantification of sediment loadings or impacts.

We do not pretend that any exact figure for sediment can be derived. We do propose that Sage Creek Limited attempt to develop some estimate of sediment quantities. For instance, United States land management agencies, such as the Forest Service, commonly make these type estimates in their timber harvest plans. We believe the same should be done to this proposal.

One thing we do know is that some 2,000 + hectares of highly erosive, mountainous land in a high precipitation area will be disturbed. We know that an extensive system of dikes and berms will themselves add some level of sediment. We know that a 44 Km road project will add quantities of sediment to the Flathead system. We also know that a 21-year industrial project, that may last longer, will continue to add sediments and that dike failures and other accidents are a very real possibility over this time frame. We do not question intentions to controll this sediment but we would like to see more quantification and more information on the practicality of doing so.

(3) Other comments related to water quality and related aquatic resources include:

(a) What potential is there for runoff from the 152,000 tons of raw coal stockpiled at the plant site (p. 2-13)?

(b) Why won't the protective berms of truck-dumped waste rock (p. 2-19) also add sediments to receiving streams? What is the composition of this waste material?

(c) There is no information about the chemical nature of the plant effluent discharged to the tailings lagoon. Nor is there any discussion of leakage and possible contamination from this lagoon.

(d) A sewage treatment plant is planned for the construction crew and the permanent work force. Certain quantities of effluent and potential problems due to nitrogen enrichment and possibly chlorine are involved. There is no discussion, however, of the impacts of malfunction (as almost invariably happens) with this treatment facility. Also, there are no specifics and no indication of the actual feasibility of a proposed drainfield for the effluent. Potential problems from sewage, and its impact, should be more realistically discussed.

(e) There is no discussion of the potential amounts of salt that would be used on the road, though it is stated that it will be used (p. 2-42). An estimate of water quality impacts should be made.

(f) It is stated that nitrogen concentrations will be monitored throughout development of the mine and that if concentrations become "threatening", further treatment will be applied to pit waters (p. 2-49). What levels are "threatening"? What type treatment is being considered and does it work?

(g) Much of the assurance that long-term reclamation will be assured, apparently rests on the assertion that "revegetation of the surface in all phases of reclamation will mitigate this impact" (p. 4-16).

We support prompt and successful revegetation. However, the assessment should go further in explaning problems involved and discuss such matters as success to date on test plots, degree of slope that would be involved in the road building, whether a performance type bond would be required, and especially potential problems involved with revegetating the very steep slopes involved with the waste dumps.

As presented in the assessment the revegetation program seems to depend on statements such as "impelementation of an operational reclamation program will be based primarily on experience gained during early years of the mine development" (p. 5-28). U. S. water quality is dependent on the success of reclamation. We believe it is absolutely essential that reclamation and revegetation be assured.

(h) Lower Howell Creek is recognized as an important spawning stream, especially for Dolly Varden trout. The discussion on page 4-26 states that sediment losses to the streams will be kept at minimal levels. On the previous page (4-25) it also points out that sediment loading to upper Cabin and Howell Creeks has been increased due to logging.

We would point out that sediment fills the intersitial spaces in the substrate gravel and can take long periods of time to clear a system. Small subtrate areas may be lost to a "slug" of sediment but long-term increased sedimentation can adversely affect miles of a drainage systems productive capacity. If logging operations have already increased sediments in these streams we believe that a mine operation disturbing some 5,000 acres of land may well substantially increase these levels. The diversion ditch design, the integrity of berms and tailing ponds etc., must all work very well in order for this stream to be saved as the important fishery resource it now is.

(i) The descriptions of the groundwater geology of the site could be improved. There are no maps or figures included in the document to clarify the written descriptions. For instance, where are the recharge and discharge areas mentioned on page 3-36 of the report? Do the perched water zones in the gravels provide recharge to the bedrock system? What is the probable magnitude of the groundwater discharge to the various drainages in the vicinity of the mine?

(j) It is not clear from the discussions of the groundwater hydrology as to which of the sedimentary formations overlying the coal contain significant amounts of water. Do the various sandstone formations act as one aquifer, or are they discrete aquifers? Does the coal contain significant amounts of water?

(k) The discussion of the project environment should contain some discussion as to the potential groundwater inflow into the mine. Some general discussions of the possible mine dewatering methods which are referred as part of the pacific hydrology report would also be useful. Also lacking is a discussion of the areal extent of the drawdown of the water table in response to mine dewatering. Will this impact any other groundwater users?

(l) The impacts section does not give sufficient detail as to the magnitude of the reduction in groundwater discharge to various stream and springs in the area. Could these reductions result in significant quality changes, perhaps from a reduction in a stream's ability to dilute certain constituents contained in surface flow from the mine?

(m) The report talks about a potential for barium problems which are undefined. When would data on this issue be collected? Do the overburden deposits contain significant amounts of barium? Could the waste rock piles become major sources of barium containing leachate even though no acid drainage conditions are expected?

(n) What is the ultimate fate of any high nitrate or barium containing water which might drain from the waste dump into the tailings ponds? Will this water be discharged to the Flathead? If so, how will impacts on the surface water quality be mitigated?

(o) The report indicates that reduced groundwater discharge to the various streams will have no impact on perched wetlands along some of the creeks because these areas are underlain by impermeable clays. There is no such thing as an impereable clay - just less permeable. The groundwater system almost certainly provides some portion of the water in these perched systems even though it may be small. Have these perched systems been analyzed to determine if the reduction in groundwater discharge could have an effect on the edges of the perched water areas where the clays might be thin and thus have a larger inflow from the deep system?

(p) If the development of deeper coal deposits is not possible, the report indicates that some pit back filling will be done. It is not clear as to how much filling is planned. If the pit is abandoned in a partially filled state, will it become a lake? Will the pit become a major source to recharge to the groundwater system? If so, what are the potential quality impacts in the groundwater? There seems to be a potential for problems with nitrates as groundwater comes in contact with the residual explosives in the pit.

(q) The mine operation will require 40,000 liters per day of deisel fuel which presumably will be trucked to the site along the haul road. There will also be a loaded coal truck traveling this route every 14 minutes. The environmental assessment should discuss the potential for and mitigation of a fuel or coal spill.

(r) The document discusses reclamation but offers no indication of commitment to an overall, long term abandonment program. For example, will the coal company continue to monitor the sediment ponds and creeks? Will the company (consistent with objective number 3, Reclamation Plan) be responsible for monitoring the revegetation plan and assuring that it has reached a self-sustaining state before abandonment? We believe it is essential that there be a long-term and enforceable committment to reclamation of the mine and associated areas.

(s) Will the wetlands impacted by this project be replaced? Both the tailings pond area (5 hectares) and the Morrissey load-out site have been identified as wetlands. The total acreage of wetlands impacted should be specified along with plans for acre-for-acre, type-for-type replacement. Page 5-18 indicates that the settling and tailings ponds will be used as replacement for some of the wetlands habitat yet these areas are expected to dry out as plant and mine runoff decrease. Is the replacement of wetlands habitat by other kinds of wildlife habitat considered appropriate?

(t) The document (page 2-40) lists 50 mg/l solids as the maximum amount to be allowed to pass from the sediment pond outflows. The document should specify whether this is suspended solids, total dissolved solids or a combination. It should be noted that 50 mg/l suspended solids is well in excess of the less than 5 mg/l suspended solids load that exists in the streams for most of the year (page 3-42). This 50 mg/l solids is also much higher than would be allowed from a Montona mining operation.

(u) Are there any plans for groundwater monitoring downslope from the tailings pond? What is the potential for underground chemical transport in this area?

(v) We suggest that gutters be included in all the bridges, with direct connections to the contaminated water ditches.

(w) It is unclear (page 4-26) whether spills on the plant site and in fueling areas will be isolated and when (page 4-27) impermeable dikes would be constructed around fuel storage areas. We would suggest an impermeable lining be included around the fuel storage area.

(x) It is indicated that (pages 4-26 and 4-34) that there will be some increase in suspended solids but no estimates are given. When will these data be obtained?

(y) Good construction practices (pages 4-31 and 4-37) for minimizing haul road construction impacts should be identified in the environmental assessment. A description of how these practices will be assured is also needed.

(z) Coal seam #4 is identified as having potential for acid leachate production (page 4-38). What volumes of waste material will be produced from the seam and where will it be buried? Leachate monitoring may be appropriate if the volumes are substantial and if they are confined to one area.

(aa) Will there be sufficient topsoil in this area for the reclamation proposed? The assessment indicate this will not be the case.

(bb) On page 4-28 there is reference made to "non-toxic organic polymers" and to the "water quality of the pit bottoms." The actual nature of the polymers and the pit bottom water quality should be explained.

(cc) Numerous references are made in the Stage II Environmental Assessment to monitoring programs. A good example would be the discussion of the monitoring of water quality impacts due to haul road construction (p-4-31). We support all water quality monitoring and believe a specific program (type pollutants monitored, schedule, techniques, etc.) should be established before any project proceeds. Such a program must be enforced throughout the lifetime of any proposed project.

United States Technical Review
of
Sage Creek Coal Limited's
Stage II Environmental Assessment

The United States government has reviewed the Sage Creek Coal Limited's Stage II Environmental Assessment. Since the project is in Canada, we have not sought to evaluate it by U.S. criteria. Rather, we have focused on possible impacts to those resources which are under our jurisdiction or of particular concern to us. Our review indicates the distinct possibility of water quality degradation in the Flathead River south of the International Boundary, air quality degradation in Glacier National Park, and adverse effects to threatened or endangered wildlife species.

Glacier National Park forms the U.S. portion of the Waterton-Glacier International Peace Park, established by the governments of Canada and the United States. Most of Glacier National Park has been proposed for wilderness designation, including the North Fork area adjacent to British Columbia. In addition, Glacier and Waterton have been designated International Biosphere Reserves and as such are marked for protection under the United Nations Educational, Scientific and Cultural Organization program. Biosphere reserves are used to study environmental changes, provide havens for plant and animal communities, and protect gene pools to safeguard the genetic diversity of species on which their continuity evolution depends.

The east half of the North Fork of the Flathead River lies within Glacier National Park, forming the park's western boundary. The Flathead River in the United States was designated a wild and scenic river by Congress in 1976 and placed under joint administration by the Secretary of the Interior and the Secretary of Agriculture. The Flathead River was so designated based on its free flowing characteristics and outstandingly remarkable values, including scenic, recreational and fish and wildlife. The intent of the designation was to preserve the river and its immediate environment in the condition in which it existed at the time of designation.

The close proximity (approximately 7 miles) of Glacier National Park and designated wild and scenic segments of the Flathead River to the mine gives us concern for these resouces due to potential adverse impacts from mine development and operation. We are now in the fifth year of the Flathead River Basin Environmental Impact Study. This congressionally mandated research effort was proposed in response to possible Canadian resource development on the North Fork and is basically a locally inspired undertaking enjoying strong State support. The $2.5 million study has concentrated on gathering background environmental data and developing management tools with which to mitigate forseeable environmental impacts to the Basin. In meetings with Canadian resource agencies and other officials including the scientists involved it has been made clear that this research is available for Canadian use.

Howell Creek, which is encompassed by the mine site, provides spawning sites for nearly 10% of the Flathead drainage bull trout population. A protracted change in water quality and/or streamflow characteristics may hasten a decline in this resource. Information presented in the Stage II assessment supports an expression of concern over the potential for addition of toxic elements (e.g. heavy metals, barium), nutrients and sediments in surface waters. Groundwater degradation is also possible. These issues alone point to a potential for significant changes in the relatively pristine environment of the North Fork.

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We are concerned that sediment runoff from various land disturbances and mining activities associated with this project could affect both the North Fork and eventually Flathead Lake. Sediment appears to be clearly associated with phosphorus which is the limiting nutrient in Flathead Lake. Other water quality concerns are addressed in our detailed comments.

The project as designated includes several sediment ponds and one tailings pond. It appears that none of the ponds will be lined, and construction materials are suspect. We are particularly concerned that the tailings pond will apparently be constructed on and from the fluvial-glacial soils in the area. If this is the case, then the potential for seepage is high.

The tailings pond will be located just south of the plant site and a short distance west of Cabin Creek. Contaminants such as unidentified chemicals, salts, kerosene and oils from the plant site will be collected through a contaminated water drainage system and discharged into the tailings pond. Seepage of these materials would contaminate Cabin Creek and the Flathead River. The significance of the impact from these contaminants to Cabin Creek and to the Flathead River will be dependent upon the volume and chemical make-up of the contaminants channeled to the tailings pond. The Stage II assessment lacks sufficient data to determine the potential significance of the impacts resulting from the contaminants in the tailings pond. We suggest that this pond either be lined or the type and volume of contaminants dumped into the tailings pond be strictly regulated.

The air quality analysis does not address potential adverse impacts to air quality related values (AQRVs) other than visibility from the proposed mine site. It should evaluate how other AQRVs (e.g. vegetation and wildlife) within Glacier could be affected by emissions from the project. The assessment should specifically address potential air quality and visibility impacts on Glacier National Park.

The analysis should specify (1) the exact type of box model used to conduct the evaluation of emission impacts, (2) the stack height and emission parameters assumed, and (3) the assumptions made regarding particle size distribution. Without this information, it is impossible to determine if the SO_2 and TSP concentration estimates were properly calculated.

Based on the information presented in Table 4.2.2.-3, the assessment does not evaluate the impact of the coal project's emissions on all relevant U.S. air quality requirements. From our experience in reviewing numerous new source permits, we have found that the U.S. 24 hour SO_2 increment ($5ug/m^3$) is typically more restrictive than the 3 hour SO_2 increment ($25ug/m^3$) that was analyzed in the assessment. Thus, the air quality portion of the assessment needs to be expanded accordingly.

We believe that the baseline background visual range is considerably greater than the 50 km calculated. Our experience indicates that for Glacier National Park and vicinity, this figure is in excess of 100 km. This apparent underestimation would downplay the potential impacts that the coal project could have on visibility. Given the extreme visual range, even small incremental additions of TSP could become significant to viewers.

We are concerned about potential impacts from this project to wildlife species which are listed as endangered or threatened under the United States Endangered Species Act and which range across the Canadian/United States border. These species include the grizzly bear, listed as threatened, and the gray wolf, bald eagle, and peregrine falcon, all listed as endangered. We believe impacts of the proposed mine will occur primarily to the grizzly bear and gray wolf.

Recent analyses of the present status of the grizzly population in northwestern Montana (Northern Continental Divide Grizzly Bear Ecosystem) indicate that the population is heavily impacted by human-caused mortality and that the present level of annual human-caused mortality may be approaching or exceeding the theoretical tolerance limits for this population. Thus, recruitment from the Canadian segment of the Flathead Valley grizzly population may have an important role in the recovery of this species as management on the U.S. side strives to reduce the degree of human-caused mortality to the extent possible. Impact of the proposed mine on 12 to 16 percent of the Canadian segment of the Flathead Valley grizzly population, as indicated in the assessment, may seriously affect population recruitment and mortality rates for both the Canadian and U.S. segments of the grizzly population.

The environmental assessment indicates that specific mitigation and management measures will be developed during Stage III. We encourage the Canadian government to require and strongly enforce appropriate mitigation measures designed to: 1) minimize human/bear conflicts; 2) prevent illegal human-caused grizzly mortalities; 3) protect important grizzly bear habitat components from adverse modification or destruction; and 4) allow grizzly use of these important habitat components. As identified in the Stage II EA, proper garbage storage and disposal will be an extremely important management function to avoid people/bear conflicts. We suggest that consideration be given to fenced solid waste collection sites and use of bear-proof refuse containers.

Impacts to the gray wolf will result primarily from alterations in numbers and distribution of their prey and from increased human access, increasing the potential for human-caused mortalities. In the absence of reintroductions, recovery of the gray wolf in the U.S. depends largely on natural recruitment of wolves from Candian populations. Providing a movement corridor free from conflict situations and reducing or eliminating human-caused mortalities on dispersing wolves so that pack formation can occur in Montana are significant factors to successful wolf recovery. We ask that the Canadian government recognize the significance of the North Fork Flathead-Valley in wolf recovery objectives in the U.S.; mitigation measures similar to those cited above for the grizzly bear would minimize the impacts of the proposed mine on the gray wolf.

The only reference made to Flathead River Basin Study data is to some of the work conducted by the fisheries researchers of the Montana Department of Fish, Wildlife and Parks. We encourage appropriate Canadian and Sage Creek Limited officials to make full use of this valuable data in project design and review. Based on the results of the 5-year Flathead River Basin Environmental Impact Study funded by the Environmental Protection Agency, the State of Montana has provided the Canadian government with over 100 pages of documented technical comments on the proposed mine and environmental assessment with respect to impacts on the U.S. side of the international boundary. Resource professionals from our federal agencies participated in the impact study, working closely with the Montana study team to insure adequate assessment of our concerns; and we support the State's comments and concerns as to possible trans-boundary effects of this project.

On the more positive side, we strongly support Sage Creek Limited's proposals for an environmental reclamation fund and for a willingness to avoid diverting Howell Creek as they once considered doing. Howell Creek, a tributary to the North Fork, is a very important Canadian spawning area for trout that spend most of their lives in United States waters. It is important to note that although the Creek would not be diverted, its use as a spawning area could still be severely jeopardized by the direct imposition of the mining operation over it. We also support the other reclamation and environmental monitoring proposals mentioned in the reports.

In conclusion, while it is not possible to determine from the information presented in the assessment to what extent the project actually will adversely impact resources in the United States, there are enough uncertainties or omissions in the data and analysis to give us serious concern. We are encouraged by the efforts on the part of the applicant to identify possible impacts and consider these in the project design. Based on our extensive experience on similar projects in the U.S., we believe that the project can be modified to meet our concerns and still go forward.

We have attached extensive specific comments and questions regarding the design and operation of the proposal. Many of these comments may be focused at on-site impacts, however, our concern is the possibility that the effects may extend offsite, across the Canadian-U.S. boundary.

SPECIFIC COMMENTS

The applicant proposed to construct several sediment ponds and one tailings pond. These ponds are to be constructed to a 50-year-flood standard. The design of the dams and spillways appear to be adequate for the environmental conditions in the area, however, it appears that none of the ponds are planned to be lined.

The tailings pond will be located just south of the plant site and a short distance west of Cabin Creek. The contaminated water drainage system encompasses the plant site and the company plan calls for discharging contaminants such as chemicals, salts, kerosene and oils into the drainage system which routes this material to the tailings pond.

The tailings pond will be constructed on and from the fluvial-glacial soils in the area. According to the plan these soils consist of well sorted gravels and sand. If the tailing pond is constructed of this material and if the pond is located on this material without a special liner the potential for the contaminants to seep from the tailings pond, through the fluvial-glacial soil is high. Thus, the significance of the impact from these contaminants to Cabin Creek and to the Flathead River will be dependent upon the volume and chemical make-up of the contaminants channeled to the tailing pond. The Stage II assessment lacked sufficient data to determine the potential significance of the impacts resulting from the contaminants in the tailings pond. May we suggest that this pond either be lined or the type and volume of contaminants dumped into the tailing pond be strictly regulated.

Page 2-8 - We note that waste dumps B, C, D, and E have extensive frontage on both Cabin and Howell Creeks and that the tailings pond and Pond #1 have direct drainage routes to the Flathead River. We are concerned that if flooding should occur, or overflow be released, that contaminants will enter the Flathead River. A significant change in the pH of the Flathead River could affect spawning runs of Kokanee salmon and subsequent use of the system by migrating bald eagles. Will these ponds be sealed?

Page 2-19 - We are concerned about potential sediment run-off moving from truck Waste Dump D to Howell Creek and Waste Dump C to Cabin Creek. What size rock will be dumped and will it be of round or angular configuration?

Page 2-25 - Will the coal burning dryer contribute to acid rain problems?

Page 2-29 - Will sewage effluent seep into the Flathead River?

Pages 2-33 and 34 - We recommend that bridges instead of culverts be installed where fisheries are present or erodible stream bottoms occur.

Page 2-39 - We note that pond efficiencies are estimated at 80-97 percent. Does this mean the other 3-20 percent of effluent will defuse into the Flathead River system?

Page 2-40 - How will snowfall and rain water accumulation effect tailing pond capacities?

Page 2-41 - When selecting structures for stream crossings, we recommend that first preference be given to bridges followed by temporary bridges, bottomless culverts, and culverts.

How will dumps be cleaned of debris? We recommend that draglines and not caterpillars be used in streambeds.

Page 2-44 - How will ice effect the operation of sediment and tailing ponds?

Page 2-46 - What preventive measures will be taken to protect water ditches or prevent contaminated waters from being swept away by high runoff flows?

Page 2-47 - Are other stream crossings protected by gutters and/or water ditches?

Pages 3-34 and 35 - If Howell Creek should relocate itself during the life of the mine, what precautions have been taken to prevent ditches and waste dumps from being eroded?

Page 3-36 - How will artesian wells effect sediment and tailing ponds, waste dumps, ditches, and retaining dams?

Page 3-74 - Bull trout and Westslope cutthroat trout are considered as imperiled fishes in the Flathead River drainage by the Fish and Wildlife Service.

Page 3-98 - Cabin and Howell Creeks appear to be wildlife corridors and any continuous human activities in these areas may affect wildlife movement even if habitat were to remain undisturbed.

Page 4-11 - Is any change in the pH of Howell, Cabin Creek or the North Fork Flathead River expected as a result of acid rain? We recommend that base line acid rain data be collected before active mining begins with continued monitoring during active mining years.

Pages 4-16 and 17 - How long before revegetation efforts begin? Lack of vegetation may cause greater than anticipated run off.

Are sediment and tailing ponds, waste dump ditches, retaining walls, bridges, and culverts equipped to handle excessively high flows?

Page 4-26 - How much will suspended solids increase?

The Stage II Environmental Assessment states that the "effects of sediment in Cabin and Howell Creeks and the Flathead River due to construction or operation are expected to be minimal" (p. 4-26). Numerous other examples can be found in the assessment where we are assured that sedimentation impacts will be minimal. What is not found, however, is any estimate or calculation of actual sediment quantities that might be expected.

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(3) Other comments regarding water quality and related aquatic resources include:

(a) The potential for runoff from the 152,000 tons of raw coal stockpiled at the plant site (p. 2-13) does not appear to have been considered.

(b) The protective berms of truck-dumped waste rock (p. 2-19) may also add sediments to receiving streams. The composition of this waste material should be identified and possible impacts evaluated.

(c) There is no information about the chemical nature of the plant effluent discharged to the tailings lagoon. There is also no discussion of leakage and possible contamination from this lagoon.

(d) A sewage treatment plant is planned for the construction crew and the permanent work force. Quantities of effluent should be identified and potential problems due to nitrogen enrichment and chlorine toxicity addressed if a direct discharge is anticipated. There should be a discussion of the impacts of and mitigation for treatment facility malfunction. Specifics should be provided on drainfield design and location if a non-direct discharge facility is contemplated. There is a potential for nitrogen migration if the drainfield is located in a high ground-water area.

(e) There is no discussion of the potential amounts of salt that would be used on the road, though it is stated that it will be used (p. 2-42). An estimate of water quality impacts should be made.

(f) It is stated that nitrogen concentrations will be monitored throughout development of the mine and that if concentrations become "threatening," further treatment will be applied to pit waters (p. 2-49). What levels are "threatening"? What type treatment is being considered and does it work?

(g) Much of the assurance that long-term reclamation will be assured, apparently rests on the assertion that "revegetation of the surface in all phases of reclamation will mitigate this impact" (p. 4-16). We support prompt and successful revegetation. However, the assessment should go further in explaining some of the problems involved. The assessment should discuss such matters as the success to date on revegetation test plots, the degree of slope that would be involved in the road building, whether a performance bond would be required, and especially potential problems involved with revegetating the very steep slopes involved with the waste dumps.

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We would point out that sediment fills the interstitial spaces in the substrate gravel and can take long periods of time to clear a system. Small substrate areas may be lost to a "slug" of sediment but long-term increased sedimentation can adversely affect miles of a drainage system's productive capacity. If logging operations have already increased sediments in these streams, we believe that a mine operation disturbing some 5,000 acres of land may substantially increase these levels. The diversion ditch design, the integrity of berms and tailing ponds etc., must all work very well in order for this stream to be maintained as the important fishery resource it now is.

(i) The descriptions of the ground-water geology of the site could be improved. There are no maps or figures included in the document to clarify the written descriptions. For instance, where are the recharge and discharge areas mentioned on page 3-36 of the report? Do the perched water zones in the gravels provide recharge to the bedrock system? What is the probable magnitude of the ground-water discharge to the various drainages in the vicinity of the mine?

(j) It is not clear from the discussions of the ground-water hydrology as to which of the sedimentary formations overlying the coal contain significant amounts of water. Do the various sandstone formations act as one aquifer, or are they discrete aquifers? Does the coal contain significant amounts of water?

(k) The discussion of the project environment should contain some mention of the potential ground-water inflow into the mine. Some general discussions of the possible mine dewatering methods which are referred to as part of the Pacific Hydrology Report would also be useful. Also lacking is a discussion of the areal extent of the drawdown of the water table in response to mine dewatering. Will this impact any other ground-water users?

(l) The impacts section does not give sufficient detail as to the magnitude of the reduction in ground-water discharge to various streams and springs in the area. Could these reductions result in significant quality changes, perhaps from a reduction in a stream's ability to dilute certain constituents contained in surface flow from the mine?

(m) The report mentions a potential for barium problems which are undefined. When would data on this issue be collected? Do the overburden deposits contain significant amounts of barium? Could the waste rock piles become major sources of barium-containing leachate even though no acid drainage conditions are expected?

(n) What is the ultimate fate of any high nitrate or barium containing water which might drain from the waste dump into the tailings ponds? Will this water be discharged to the Flathead? If so, how will impacts on the surface water quality be mitigated?

(o) The report indicates that reduced ground-water discharge to the various streams will have no impact on perched wetlands along some of the creeks because these areas are underlain by impermeable clays. The degree of permeability of these clays should be identified since all clays are somewhat permeable. The ground-water system almost certainly provides some portion of the water in these perched systems even though it may be small. Have these perched systems been analyzed to determine if the reduction in ground-water discharge could have an effect on the edges of the perched water areas where the clays might be thin and thus have a larger inflow from the deep system?

(p) If the development of deeper coal deposits is not possible, the report indicates that some pit backfilling will be done. It is not clear as to how much filling is planned. If the pit is abandoned in a partially filled state, will it become a lake? Will the pit become a major source to recharge to the ground-water system? If so, what are the potential quality impacts in the ground water? There seems to be a potential for problems with nitrates as ground water comes in contact with the residual explosives in the pit.

(q) The mine operation will require 40,000 liters per day of diesel fuel which presumably will be trucked to the site along the haul road. There will also be a loaded coal truck traveling this route every 14 minutes. The environmental assessment should discuss the potential for and mitigation of a fuel or coal spill.

(r) The document discusses reclamation but offers no indication of commitment to an overall, long-term abandonment program. For example, will the coal company continue to monitor the sediment ponds and creeks? Will the company (consistent with objective number 3, Reclamation Plan) be

responsible for monitoring the revegetation plan and assuring that it has reached a self-sustaining state before abandonment? We believe it is essential that there be a long-term and enforceable commitment to reclamation of the mine and associated areas.

(s) Will the wetlands impacted by this project be replaced? Both the tailings pond area (5 hectares) and the Morrissey load-out site have been identified as wetlands. The total acreage of wetlands impacted should be specified along with plans for acre-for-acre, type-for-type replacement. Page 5-18 indicates that the settling and tailings ponds will be used as replacement for some of the wetland habitat. Yet these areas are expected to dry out as plant and mine runoff decrease. Is the replacement of wetlands habitat by other kinds of wildlife habitat considered appropriate?

(t) The document (page 2-40) lists 50 mg/l solids as the maximum amount to be allowed to pass from the sediment pond outflows. The document should specify whether this is suspended solids, total dissolved solids or a combination. It should be noted that 50 mg/l suspended solids is well in excess of the 5 mg/l suspended solids load that now exists in the streams for most of the year (page 3-42). This 50 mg/l solids level is also much higher than would be allowed from a Montana mining operation.

(u) Plans for groundwater monitoring downslope from the tailings pond should be developed. Also, the potential for underground chemical transport in this area should be evaluated.

(v) We suggest that gutters be included in all the bridges, with direct connections to the contaminated water ditches.

(w) It is unclear (page 4-26) whether spills on the plant site and in fueling areas will be isolated and when impermeable dikes would be constructed around fuel storage areas (page 4-27). We would suggest an impermeable lining be included around the fuel storage area.

(x) It is indicated that (pages 4-26 and 4-34) there will be some increase in suspended solids but no estimates are given. When will these data be obtained?

(y) Good construction practices (pages 4-31 and 4-37) for minimizing haul road construction impacts should be identified in the environmental assessment. A description of how these practices will be assured is also needed.

(z) Coal seam #4 is identified as having potential for acid leachate production (page 4-38). What volumes of waste material will be produced from the seam and where will it be buried? Leachate monitoring may be appropriate if the volumes are substantial and if they are confined to one area.

(aa) Will there be sufficient topsoil in this area for the reclamation proposed? The assessment indicates that this will not be the case.

(bb) On page 4-28 there is reference made to "non-toxic organic polymers" and to the "water quality of the pit bottoms." The actual nature of the polymers and the pit bottom water quality should be explained.

(cc) Numerous references are made in the Stage II Environmental Assessment to monitoring programs. A good example would be the discussion of the monitoring of water quality impacts due to haul road construction (p. 4-31). We support all water quality monitoring and believe a specific program (type of pollutants monitored, schedule, techniques, etc.) should be established before any project proceeds. Such a program must be enforced throughout the lifetime of any proposed project.

What is as important, however, is the question of what happens if pollutant levels are found to be high. Does the project stop? Is there any way to enforce corrective measures? The point is that once a large ground-disturbing operation is underway or large polluting sources established, it may well become very difficult to stop work or to correct the problem. This is a very important question to the United States and one only lightly touched upon in the Stage II application.

(dd) The assessment points out (p. 4-64) that the "large construction work force and the operating mine work force could have a serious negative impact through significantly increased angling pressure on Howell and Cabin Creeks." We must emphasize that these fish include many that only spawn in these creeks. They spend most of their lives in United States waters. As a result, the fish populations of these creeks are of much greater importance to United States fishery than the sizes of populations might indicate.

Depredation of bull trout spawners in Howell Creek could be a problem because of their susceptibility to the 400-man construction force. To protect these large and highly visible fish, the spawning area would have to be monitored very closely.

(ee) The discussions on water quality impacts of the haul road state that these impacts will be minimal. Again, we believe there should be more information provided about the nature of the terrain and potential problems involved, such as soils, slopes, slumping potential, etc., with this road.

As an example, on page 4-71 it is stated that the section of the existing Flathead road that is low-lying and liable to inundation may be raised or rerouted. We wish to point out that there is no description of the length to be raised, method of raising nor the nature of the terrain involved in rerouting. Either raising or rerouting the road could lead to substantial sedimentation.

(ff) On page 4-33 it is stated that five potential impacts have been identified that may impinge on the aquatic biota, (i.e., sedimentation, nutrients from sewage and blasting, road crossings, proximity of waste dumps to Howell Creek and increased angling pressures especially during construction). It goes on to say, however, that "quantification of the impacts on the stream biota is not possible, given the present state-of-the-art." If these impacts can't be quantified, how can it be concluded in the same pages that "impacts will be minor?"

(gg) Pumping from the pits will probably affect the mine area ground-water regime. The proposed diversion ditch paralleling Howell Creek could result in dewatering of the creek. These disruptions could cause the loss of part or

all of the water in this important fishery. This would be especially critical because bull trout spawning coincides with low flow periods.

(hh) Overburden sometimes contains high levels of pyrites plus other minerals. The mine as proposed will result in the deposition of huge quantities of this overburden material. Unlike the presently undisturbed situation, this material will probably be exposed to much more percolating water and unsaturated conditions in these waste dumps. This situation could promote pyrite oxidization and resulting acid problems. No analysis of this potential problem appears to have been done.

(ii) The tailings ponds will be enriched by the addition of nitrates from blasting and phosphorus associated with sediments. Enriched ponds may well become anaerobic from excessive algae growth. This anaerobic condition can lead to the solubilization and eventual mobilization of the various metals also found in the tailings pond. This potential problem and its serious consequences have not been addressed.

(jj) The proposed clean water ditches which are routed straight to the creeks, will be cut through soils that have not been previously disturbed. They will probably become sources of sediment. A discussion should be presented regarding potential impacts, and to indicate how sediment will be controlled in the ditches.

(kk) The assessment states that ice will be removed from the sediment control ditches. Since this could be a very large quantity of ice, how does the applicant propose to remove it? Where would it be disposed?

HEARING - July 6, 1983
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

Testimony of Dr. Jack A. Stanford

INTRODUCTION

I am Dr. Jack A. Stanford and am Director of the University of Montana Biological Station. Since 1970, I have actively conducted aquatic research in the Flathead River-Lake ecosystem: the results of my research are presented in over 50 book chapters, scientific journal papers, and open-file reports. I directed the limnological investigations conducted by the Flathead River Basin Environmental Impact Study (FRBEIS).

The Final Report of the FRBEIS nicely summarizes the conclusions of my research of limnological problems in the Flathead Basin, but, several specific points should be reemphasized. These specific points of concern underscore four basic observations derived from my studies of the Basin's aquatic resources:

1. The waters of the Flathead contain very low concentrations of solids (i.e. including particulate or suspended solids, except during spring freshet), which not only limit biotic productivity (an important attribute of high quality water), but also render the system extremely sensitive to environmental pollutants, particularly substances in sewage and acid rain;

2. regulation of water flow by Hungry Horse and Kerr Dams presently exerts the greatest negative environmental impacts on the aquatic system;

3. sewage pollution from urban areas is rapidly degrading the quality of Flathead Lake; and,

4. the likelihood of substantial water pollution downstream of the Cabin Creek mine is extreme, if the project proceeds as presently planned.

ENVIRONMENTAL OVERSIGHT ON THE FLATHEAD RIVERS

The FRBEIS established that the unregulated segments of the rivers and streams are high quality, if not pristine. A large data base now exists from which future conditions may be evaluated. However, three questions require resolution, before predictions of future riverine conditions can be made.

First, it appears that unnaturally increased erosion is occurring in the downstream reaches of the larger tributaries (4th to 6th order). Simply stated, the data indicate that increased water yields from clear cuts (due to loss of evapotranspiration from forest canopy) is causing accelerated

mass wasting (erosion) of river banks. Increased sediment loading is causing changes in channel configuration (promoting meanders) and causing more downstream transport of fine sediments, which reduces water quality directly by clogging and scouring actions on biota and indirectly by fertilizing the water (promoting algal growth). Thorough examination of land use and water and sediment yields in Basin streams is needed, especially on the North Fork where mining, logging and other development interests collide head-on with preservation interests in Glacier National Park.

A second concern relates directly to sediment from the Cabin Creek mine site. The FRBEIS points out that Canadian regulations permit discharge of 30mg/ℓ suspended solids from tailing ponds. Streams (4th order and smaller) in the Flathead Basin do not carry sediment loads reaching 30mg/ℓ, even during spring runoff. The recommendation by the FRBEIS of a 15mg/ℓ discharge standard (with discharges only during runoff) is reasonable, but will require very close monitoring at the mine site and on the North Fork at the U.S.-Canada border. Presently, the water monitoring program at the border is limited to quarterly sets of water samples collected by the U.S. Geological Survey and monthly sets for analysis of a limited set of parameters collected under a cooperative agreement between the University of Montana Biological Station and the National Park Service.

Third, the extreme sensitivity of waters in Glacier National Park and the Mission Mountains to acid rain is emphasized in the FRBEIS report. However, biophysical data from high altitude lakes and streams are lacking and thorough examination of those drainages thought to be most sensitive (e.g. Dutch Creek) should be undertaken immediately. New data indicate acidic snow was deposited in the Basin last winter, suggesting that this problem should be given high priority for detailed investigation.

ENVIRONMENTAL OVERSIGHT IN FLATHEAD LAKE

The quality of Flathead Lake is directly dependent on the recruitment of nutrients from a variety of sources within the Flathead Basin. Presently, phosphorus in sewage and attached to sediments is of greatest concern. Further increases in phosphorus loading from these sources will accelerate the eutrophication process in the Lake. The inputs of nutrients and concommittant response in the phytoplankton community must be closely monitored. All such measurements have now ended, because new funds for monitoring have not been forthcoming.

The Bonneville Power Administration (BPA) has funded large-scale investigations of the kokanee salmon fishery in Flathead Lake. I emphasize that these fisheries studies are needed, but the ecosystem-level perspective fostered by the FRBEIS is being overlooked by BPA. Were it not for the large volume of water annually moving through the Lake, the nutrient problem would be much more severe (because abnormal nutrient loads are diluted so greatly by the short duration for turnover of lake volume : 2.5 years). A change in the Lake's water budget by new release regimes from Hungry Horse and Kerr Dams in order to enhance kokanee salmon production may backfire because of unforseen inpacts on the changing trophic status of the Lake. Furthermore,

I am convinced that the introduced opossum shrimp, Mysis relicta, is well on its way toward becoming a dominant member of the Lake's food chain (we have recently collected juvenile shrimp in shallow water off Yellow Bay). This may impact the salmon fishery in a negative way, since the shrimp and salmon are dependant on the same food items and the shrimp are much better adapted for catching those food resources, while at the same time avoiding the kokanee by staying on the lake bottom in daytime. On the other hand, lake currents, about which we know very little, but which are undoubtedly influenced by artifical flow regulation, may make the shrimp available as food for kokanee in some parts of the lake (e.g. the narrows) by sweeping the shrimp off the bottom during the daytime. My point is this: single resource management will not be successful in a system as complicated as the Flathead. New research should have clearly-defined objectives, which are based on present understanding of the ecosystem as a whole.

RECOMMENDED ACTIONS

In view of the findings of the FRBEIS and in consideration of the specific concerns I have raised above, I hope this subcommittee will recognize that monitoring recommendations made by the Steering Committee of the FRBEIS must be acted upon at once. The water quality monitoring program on the North Fork at the border should be intensified and emphasize a major study of sediment transport. The U.S. Forest Service should become a partner with the National Park Service to fund this work, as well as funding adequate research of stressed stream systems within their respective jurisdictions (e.g. water-sediment yields from clear-cuts· acid rain impacts). Additional funds are needed to monitor nutrients and primary productivity (measures of the eutrophication process) in Flathead Lake.

I also hope you will recognize that, while Cabin Creek hangs as a threat over the Basin, the quality of Flathead Lake continues to decline due to inability of sewage treatment systems to handle the increasing population of the Flathead Valley. Many aspects of the limnology of the Lake remain unknown, but it is clear to me that we are rapidly approaching a threshold beyond which the present quality of the Lake will likely not recover. To decrease the impact of nutrient pollution on Flathead Lake, I have recommended (a) that the Evergreen area be sewered, (b) that direct discharge from sewage treatment plants be curtailed or eliminated, and (c) that forestry practices in the drainage emphasize regrowth of canopy to decrease erosion. To put such options into effect will require an earnest committment by the citizens of the Flathead Valley and, probably, federal assistance. The alternative, whether the Cabin Creek mine becomes a reality or not, is a very green lake.

Respectfully submitted,

Jack A. Stanford

Dr. Jack A. Stanford

TESTIMONY PRESENTED TO THE SENATE SUBCOMMITTEE
ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT
REGARDING
FLATHEAD RIVER BASIN STUDY AND IMPACTS OF PROPOSED
CABIN CREEK MINE

July 6, 1983

Prepared by
Montana Department Fish, Wildlife and Parks

Presented by
Patrick J. Graham

The Montana Department of Fish, Wildlife and Parks, under direction of the Flathead River Basin Environmental Impact Study Steering Committee conducted a five-year basinwide assessment of the fisheries resource, in part, to assess potential impacts of the proposed coal mining near Cabin Creek on the North Fork of the Flathead River. The study was limited in scope to Flathead Lake and those major tributaries to the Lake into which the fisheries still migrate. The study, therefore, excluded major tributaries, such as the South Fork and Swan Rivers, which are dammed near their mouths.

Water resources were the major focus of the Steering Committee studies in recognition that impacts from land disturbances in the upper Basin could potentially cause changes over a hundred miles downstream in Flathead Lake. Although the Basin is seemingly well protected by National Park, Wilderness Area and Wild and Scenic River designations, the fragile ecosystem of the Flathead Basin remains vulnerable. This can be exemplified by reviewing the data compiled during this study on the native fisheries.

The westslope cutthroat and bull trout are native to the Flathead, and the Flathead is home to the single largest remaining population of these species in the State of Montana. Like their cousins, the Pacific salmon, cutthroat and bull trout migrate downstream from their natal streams in the

headwaters of the Basin after rearing for two or three years. Some remain in the rivers, but most continue to Flathead Lake to grow to maturity before returning to the headwaters to spawn.

Plentiful winter snows, the beauty of uplifted mountains, scoured by glaciers and our crystal clear rivers attract millions of visitors to the Flathead each year. These same qualities favored the evolution of the migratory habits of its native fish species. The water is cold and sterile, the growing season is short, the stream gradients are often high and many of the glacial soils are unstable. Those fish which migrated to the more productive and stable habitat in the lower river and Flathead Lake gained a competitive advantage over the stream residents despite the stress of migrating, in some cases over a hundred miles. Migrants grew faster and larger and produced more eggs. Cutthroat which remain in the tributaries seldom exceed nine inches in length, but migratory cutthroat can grow to twice that size.

This establishes two important constraints in successfully managing the Flathead fisheries. First, they must have unimpeded access through the river system to complete their life cycle. In addition, an impact on the fisheries in one part of the Basin will likely have a direct impact on the quality of the fishery over a hundred miles away. The wide distribution of tributary streams and aquatic resources also makes the fisheries vulnerable to cumulative impacts, or the additive and interactive impacts of many smaller developments in the same basin.

In highlighting our study efforts, I will try to show how these impacts may occur. It should also become obvious that this type of discussion would be only hypothetical without results from this basinwide study. In

closing, I will describe some very important outgrowths from the Flathead study which will likely have regional significance.

Habitat classification and fish censuses were conducted in 92 tributaries and 186 reaches of streams in the North and Middle Forks of the Flathead River. Cutthroat were found in 97 percent of these streams and bull trout were found in 68 percent of the streams. Critical rearing areas, or those with high densities of juvenile fish, were identified; 30 stream reaches for cutthroat and 22 reaches for bull trout.

Fish density and habitat information was used to determine habitat variables important to fish rearing. These variables were then used to develop a model to predict fisheries potential of a stream reach. Such information will be valuable in assessing habitat changes over time and directing future management activities to minimize impacts on key stream reaches. This study further demonstrated that the fisheries use very specific sites within a limited number of streams for spawning and rearing. This is particularly important because the unknowing person may presume that one reach of stream is as good as another for a fish, and also, that if disturbed in one area, they will simply move to another. This is not the case.

Bull trout spawning is a good example. There are over 450 miles of stream available to bull trout during the fall spawning season. A census in the most likely stream habitat found spawning in only 129 miles or 28 percent of the available stream miles and 29 percent of the streams inventoried. Habitat variables were also used to predict the potential of a stream reach for spawning habitat.

Counts of spawning sites also proved to be a valuable tool in evaluating the relative contribution of tributary streams in the drainage.

For example, the North and Middle Forks appear to provide equally in terms of numbers of successful spawners. Within the North Fork drainage, Howell Creek alone provides approximately 10 percent of the spawning. Loss of that tributary would be a significant impact on the River and Lake fishery. An estimated 3,000 adult fish would be lost annually. This gains significance in light of the trophy size (18-26 inches) for adult bull trout. These potential losses do not factor in losses which occurred from past management practices.

Following results of these inventories, fish managers realized the limited nature of the population and reduced the daily and possession limit of bull trout to only one fish in both the Flathead Lake and Flathead River. Limits were also significantly reduced in the Canadian portion of the Flathead, based on our study results.

Further assessment of resource development plans indicated that major timber sales were planned for four tributary streams directly adjacent to 35 percent of the remaining spawning habitat. Negative impacts expected from development of a coal mine adjacent to Howell Creek would require a significant reduction in timber harvest on U.S. Forest Service lands along the North Fork.

Stream cover was the most important factor affecting cutthroat trout abundance in tributaries. This also has significant implications on timber management in the riparian or streamside vegetation zone. Guidelines are available to ensure proper management.

The rivers act largely as corridors for migratory fish during most of

the year. However, the study also determined that the juvenile cutthroat emigrating from tributaries in late spring spend most of the summer and early fall in the river before entering Flathead Lake. This is a significant finding because previously it was believed that the cutthroat spent little time in the river. This new information demonstrates the importance of maintaining the quality of food production and fish habitat in the river system. An increase in the sediment load into the river would reduce the quality of this habitat. Related studies on the North Fork indicate that increased sediment loads would result in a shallowing and widening of the river, decreasing its suitability as trout habitat.

Census of water-based recreation use in the river and lake system illustrated a large amount of use and economic value. Fisherman-use was characterized by the seasonal migratory fisheries in the river. Over 137,000 hours of use and a harvest of 89,000 fish was estimated on the mainstem and North Fork of the Flathead River. Kokanee were the major gamefish captured, although the fall fishery is now closed due to declines in the fish population resulting from impacts from past operation of Hungry Horse Dam on river spawning success. Changes in operation of the project were recently implemented as part of the Northwest Power Planning Council's Fish and Wildlife Program.

Cutthroat comprised 91 percent of the catch in the North Fork, while bull trout comprised 2 percent of the catch. The average size of cutthroat in the mainstem Flathead River census was 11 inches, compared to 23 inches for bull trout. The lake fishery was also dominated by kokanee. Anglers expended over 600,000 hours of use and harvested an estimated 537,000 fish.

A valuation of water-based recreation and preservation values of the

Flathead Lake, mainstem and North Fork of the Flathead River was also conducted as part of this study. The value generated was 102 million dollars per year. This reflects recognition of both regional and national values of the Flathead Basin.

Development of the proposed coal mine on Cabin Creek could significantly impact the Flathead River-Lake ecosystem. On-site impacts would include potential destruction of Howell Creek, one of the most important rearing and spawning streams in the basin. Habitat degradation would probably result from increased siltation, potential dewatering from disturbances of the groundwater, and disturbances of the natural hydrograph resulting from removal of an adjacent mountain.

Estimates of potential sediment loading, particularly coal dust, could have significant off-site impacts in the North Fork of the Flathead River. Accumulations of this material in side channels and riffles will decrease productivity. Similarly, increased sediment loads will change the morphology of the river resulting in a decrease in suitability of trout habitat.

Lack of a detailed reclamation plan precludes assessing the potential to reduce these impacts. However, the size and proximity of the spoils, dumps and settling ponds to the floodplain could result in serious problems, if reclamation is not achieved and if the stability of the site is not maintained, particularly after mining is completed.

The Basin study has already yielded many valuable pieces of data and tools for continued work. Alone, it stands as a record for those that follow to evaluate the results of their management activities. Still, a basinwide

study can only measure large-scale impacts. For that reason, two other site-specific studies were undertaken. We were fortunate to obtain outside funding for these efforts, in part as a result of the foundation established by this study.

The first is an evaluation of salvage harvest of beetle killed timber in Coal Creek, a tributary to the North Fork Flathead River. This study was funded by the U.S. Forest Service in an attempt to evaluate occurrence and movement of instream debris, and impacts on streambed composition in bull trout spawning sites following logging. Presently, fine sediment levels in the stream appear to be excessive. The study will be continued to evaluate the effects of increased sediment on survival of bull trout eggs.

Another study is being conducted in the Swan River drainage on the potential cumulative impacts of micro-hydro development on the migratory fisheries. A large number of preliminary permits were filed for micro-hydro projects, apparently related to incentives in the Public Utility Regulatory Policy Act (1978). While the Northwest Power Planning Council was addressing cumulative impacts of major hydro development on salmon and steelhead in the Columbia Basin, we approached the Bonneville Power Administration regarding the need to assess cumulative impacts of many smaller projects. The Swan study uses the same basic basinwide assessment tools developed in the Flathead study. In this case, the assessment was aimed at a specific type of development. However, other existing land uses are being assessed in cooperation with the U.S. Forest Service. We hope to develop criteria for evaluating proposed projects, methods to assess impacts, a method to predict cumulative impacts and an economic valuation method to assess these potential impacts.

As developments continue to occur in the Basin, they should be accompanied by monitoring. The value of the present study will be limited without these more site-specific evaluations. These evaluations are often considered to be a luxury for funding consideration. However, without them the planning process is often frustrating and slow. Further, the realization that we are never able to answer all the questions before actions are taken should be justification enough for monitoring actions that do occur. When we aim the cannon and shoot into the dark, the least we can do is go out and see where it has landed.

The cumulative impacts of development on the salmon and steelhead in the Columbia stand as a grim reminder of the potency of cumulative impacts. When viewing the process being undertaken by the Northwest Power Planning Council, we would be wise to remember that our present decisions about the future of the Flathead Basin, whether active or passive, may be largely irreversible in respect to maintaining the ecological integrity of the Basin. Our advantage lies in the availability of the data base compiled during this study. That advantage will be lost if the data is not used and if decisions are not made with full public knowledge of the consequences.

Testimony of

Harold W. Robbins, Chief
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Presented to

Subcommittee on Toxic Substances and Environmental Oversights
Senate Environment and Public Works Committee
United States Senate

July 6, 1983
Kalispell, Montana

Before I discuss the air quality studies in the Flathead River Basin during the past five years, I want to thank the committee for the opportunity to present these results to the public. Often there is little opportunity or we forget to share the results of such studies with the general public. This forum provides an excellent opportunity to do that.

I would also like to publicly thank the many people who gave so much time and effort to the studies. The steering committee and Ron Cooper are to be congratulated for their insight in recognizing the importance of this issue and doing their best to provide necessary funding. I also want to thank John Coefield, Bob Raisch and Jim Olsen of the Air Quality Bureau staff. Ben Nyren, who performed much of the actual field work, must also be thanked, since many of the project results could not have been accomplished without his efforts.

The air quality studies consisted of essentially four basic goals:

1. Determine the nature of the existing air quality;
2. Ascertain the nature of the meteorology of the area;
3. Develop a method for simulating the effects of existing air pollution sources on the air quality; and
4. Apply the simulation method to new and proposed sources of air pollution to determine its effect on air quality.

The benefits of such activities not only defines the existing air quality, but also allows one to predict the effect of proposed activities on the existing airshed. Such an accomplishment can have immense future benefits. For example, the effects of the proposed Cabin Creek Coal development can be predicted; they can also be applied to potential developments in the valley.

Allow me to briefly summarize some of the results of the study.

1. Existing air quality. Ambient air (air that is external to buildings) was measured in fourteen locations throughout the valley during the study. Among those items measured were:

   Total Suspended Particulate (all particles suspended in the atmosphere)

   Fine Particulate (only those particles small enough to enter human lungs)

   Coarse Particulate (those particles large enough to inhale, but not enter the lungs)

   Visibility (using a method which is especially sensitive to fine particulate)

   Sulfates (those particles which are associated with sulfur-related emissions and in lesser amounts, soil dust)

   Nitrates (those particles which are associated with high temperature combustion)

2. Meteorology. Various weather measurements were taken at a number of locations throughout the valley. The following parameters were obtained:

   Surface wind speed (measured 10 meters above the ground)

   Surface wind direction (measured 10 meters above the ground)

   Temperature

   Upper Level Wind Speed (measured at heights up to 10,000 feet)

   Upper Level Wind Direction (measured at heights up to 10,000 feet)

   Upper Level Temperatures (a good indicator of inversions, etc.)

   Acoustic Sounder (measures atmospheric stability)

   Barometric Pressure

These two categories comprised the major efforts of investigation during the air quality study. Not surprisingly, the studies showed higher levels of air pollution exist in areas with more people. The Polebridge and Ninepipe Wildlife Refuge areas had the least air pollution, while the urban areas of Kalispell and Columbia Falls recorded the highest.

In retrospect, one of the most important accomplishments of the study was the compilation of the meteorological data. This information will be invaluable to decisionmakers for many years into the future. One problem that continued to plague us was the lack of suitable surface and upper level winds. As it turns out, the nearest acceptable data for comparison purposes comes from Spokane, Great Falls and Missoula.

It is clear that none of these sites are accurate for describing conditions in the Flathead Valley. We have, for the first time, data which can reasonably describe meteorological events for the area. The importance of this data in air quality management cannot be over-emphasized. This compilation of weather patterns can be the breaking point in determining whether or not some new development will comply with applicable air quality laws.

Probably the most difficult tasks to accomplish were the third and fourth; that is, the simulation of the actual air quality conditions. Obviously the existing air quality and meteorology must be well defined in order to have any hope to predict real-world events. In order to accomplish this, an estimate of all emissions of air pollutants had to be made. While the Air Quality Bureau maintains a standard list of all major industries, the emissions from roads, commercial businesses and the like are not routinely accessible. Once these emissions were defined, a number of computer simulation techniques were attempted. Different techniques were applied to different sections of the valley. With one exception, the technique chosen was an EPA-approved method.

The DHES has spent countless hours refining these simulations. I am pleased to report that our analysis for the North Fork area was the best. We have not been as successful with the rest of the area. This is not to say that the simulation effort was useless for the rest of the valley. It merely reflects more sources of air pollution and thus is more difficult to track in terms of results.

Even though the project has come to an end, we are continuing to work on this simulation project. We believe it will be an invaluable tool for the future and worth our effort to follow-up on the results.

I would like to spend a few minutes summarizing the results of the effects of the Cabin Creek Coal development on the valley. The Air Quality Bureau has been quite interested in this project since its inception. There are several considerations worth noting. The Bureau wants to be sure that the emissions from a facility will not cause any violations of ambient air quality standards in that area. In addition and perhaps most important, is the issue of its effect on Glacier National Park. As you may be aware, Glacier National Park, both under federal law and state rules, receives some very special air quality protection. These rules are known as Prevention of Significant Deterioration (PSD) and play an important part of the national air quality policy.

Although the rules themselves are complicated, their effect can be simplified with a few basic points. First, Glacier Park is known as a Class I area, which means it receives special protection. Second, it is the intent of rules to prevent any significant deterioration of air quality to these and other areas, and finally the PSD rules define any measurable amount of air pollution in a Class I area to be a "significant" deterioration. Since the proposed coal development is so close to Glacier, it is apropos to determine if there will be any exceedances of these Class I standards in the Park.

This question was nearly impossible to answer for some time since details of the proposed mine were not know. When the Stage II Environmental Assessment was received, the Bureau, in conjunction with other state agencies and contributors made an analysis of these impacts. Our conclusion in April 1982 was that the Class I standards were at risk of being violated. We have since redone the April analysis with a more complete data set and a better simulation technique. In summary, our conclusions have not changed from the April report. The newer information suplied to the simulation still predicted exceedances of the Class I standard.

We obviously still remain concerned over the issue and do not wish to have any exceedances of these standards.

If you wish, the Bureau can provide more specific information about any data I have discussed. The actual results are contained in a number of Bureau and Flathead River Basin Studies reports.

I want to thank you again for your interest in this matter and would be pleased to answer any questions you might have.

SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

(Toxic Substances and Environmental Oversite Sub-Committee)

Field Hearing
July 6, 1983
Kalispell, Montana

Statement
by
Robert C. Haraden, Superintendent
Glacier National Park

Good morning Mr. Chairman and Senator Baucus. I appreciate the opportunity to represent Glacier National Park before you today.

The mountainous landscape of northwestern Montana contains an abundance and diversity of natural resources. Productive soils, healthy forests, clean waters, and scenic beauty create a livable environment for many thousands of local residents. Additional thousands visit the region each year in response to its unique attributes. The regional economy is largely dependent on the natural resource base and future growth inexorably linked to programs which sustain their use. It is therefore essential that both public agencies and the private sector assume a cooperative posture in wise management for the future.

Glacier National Park is an important contributor to the general health of the regional environment. The park is managed as a protective sanctuary where natural processes are permitted to shape the native plant and animal communities. This management mandate is unique in that it assures the preservation of natural ecosystems. As such, recreational, aesthetic, and educational benefits have been derived by many millions of visitors since the park was established in 1910. At the same time, a wilderness haven and genetic reservoir have been provided for many species which have difficulty coexisting with people in other areas. Looking to the future, the park provides a scientific yardstick against which human impacts on the surrounding landscape can be measured and evaluated.

Protection and preservation of a large natural area requires a progressive management program based on a comprehensive bank of factual information. The essential ingredients in creating this bank is development of a baseline information system. From this bank, we can describe historic park conditions and identify important departures from the natural scene. In addition, the groundwork is then present for determining trends, evaluating current status, and predicting future conditions of park resources. The addition of scientific data to existing park management policies strengthens our ability to attain a goal of conserving natural ecosystems.

The park has recognized the critical relationship between scientific information and the accomplishment of our mandated mission. With this in mind, our staff capability in scientific research has been expanded during recent years. However, capability to address resources management problems has fallen behind. Field support funds have not kept pace with staffing levels, but we are hopeful of improvement of that deficiency in the coming years. In the meantime, we continue to make progress in protecting our resources through application of existing data and by extrapolating information from sources beyond the park boundaries.

From a park perspective, an immensly important natural resources information bank has been generated by the Flathead River Basin Environmental Impact Study. The five year effort addressed a variety of regional issues ranging from economics to streamside wildlife. Relevance of study topics was assured by a steering committee which represented interest groups from throughout the

region. Furthermore, project administration emphasized the production of reports and recommendations as final goals. Their mission has been accomplished in admirable fashion. The final package is unique to say the least, and has already found its way into the park natural resources information system.

The aquatic studies were particularly important since they revealed the interdependency of streams and lakes. For example, bull trout which grow and mature in Flathead Lake migrate far up the Flathead River and into smaller tributaries to spawn each year. Some of these spawning streams are in Canada while others are in Glacier National Park. Thus, it can be seen that bull trout management requires both a regional and an inter-agency approach. The basin study has provided the tool to implement the necessary program and the standards against which progress can be measured.

The high quality of our atmospheric resource is frequently taken for granted by those of us who live and work in northwestern Montana. Yet, it is becoming increasingly clear that air is a vital resource, that it can be degraded, and that effects of deteriorating quality can spread to both terrestrial and aquatic resources. Results of the basin study point to the kinds of degredation that can be expected from various regional activities. Since the park is mandated to maintain an airshed of the highest quality, we are now implementing a monitoring program which incorporates results from the basin study. We expect that the combination of baseline data and active monitoring will be an effective tool in preventing significant airshed deterioration in the future. We also feel that use of the data in proactive negotiation is now possible, a situation far superior to reactive confrontation.

The use of satellite imagery to map the distribution, amounts, and type of vegetation cover was another important study goal for the basin. Not only did the approach foster the creation of a common regional data base, it also promoted more productive interagency relationships. Glacier National Park and Flathead National Forest have now entered into a cooperative agreement which builds on the satellite data base and is being expanded into a graphic information system. The system utilizes current technology to help monitor natural resources on a real time basis. We are excited about this cooperative project and its management implications for the future.

There are numerous additional examples of the value of basin study results to the park. The assembly of existing information into a bibliography is now providing a base from which two science program assessments are being conducted, the goals of which are to help direct future research efforts by the park staff. Economic studies demonstrated the contribution of the park to the regional economy and projected its future role as part of the regional recreation picture. The value of mature forests as part of streamside wildlife habitats was revealed and a predictive model for evaluating future changes developed. I can assure you that these and other basin study data are now part of our natural resources information system and used frequently in making management plans for the future.

At this point, it seems worthwhile to digress from specific issues and take a broader look at the park as part of a regional setting. In fact, accumulating evidence make it increasingly difficult to separate the park from surrounding areas on an environmental basis. Accordingly, the concept of regional management is approaching reality and we are now looking beyond our boundaries to assure protection of park values. Basin studies have helped us to focus attention on significant issues, not the least of which is a proposed open pit coal mine near the park boundary in southeastern British Columbia. This single activity holds greater potential for changing the park environment than any other threat identified to date. Maintenance of clean air and water will be especially difficult, but extremely important should mining activity be initiated as proposed. We have been working through our Washington Office with the U.S. State Department to express our concerns directly to the Canadian and Provincial Governments.

Coal mining is not the only basin activity with potential for influencing the park environment. We remain concerned about a general expansion of human activity in areas near the park. This gradual erosion of the buffer zone is pushing the park toward status as an ecological island. Wildlife with large home ranges such as grizzly bears may be the first to respond to boundary encroachment. Homesite development, timber removal and associated road building, energy exploration, and recreation are among the more significant issues which we now must address on an increasingly frequent basis. In some cases, such as logging in British Columbia, changes to our buffer may be extending beyond a point of correction. In others, preventative negotiation using factual information remains a viable option for management.

On September 27, 1974 Glacier National Park was established by UNESCO as a World Biosphere Reserve recognizing it as a special place on earth to provide a permanent baseline record of the environment in its natural state and as a monitoring site to measure global pollution fallout to serve as an early warning site. Its purpose is also to provide for professional training and public education relating to major environmental issues, preservation of genetic integrity in the plant and animal community, while at the same time allowing for public use. The integrity of Glacier as a World Biosphere Reserve may be the key to the quality of life in North Western Montana 50-100 years from now.

Waterton Lakes National Park was separately established as a Biosphere Reserve in 1979 (one of only two in Canada).

The Superintendent of Waterton Lakes National Park and I have recommended these two parks be redesignated as one International Biosphere Reserve - the first in the World.

As I conclude, may I emphasize the importance of good information in managing our natural resources. Information represents one of the few threads of continuity which management agencies have at their disposal. Managers must make decisions on the basis of the best information available at the time - often

without needed data. We can make decisions on amazingly small amounts of good data but its absence often leads to planning based on emotion and opinions. With this in mind, it should be obvious that the basin studies have led us toward an enlightened atmosphere for making difficult decisions. At the same time, we have much to learn and I would recommend that we now turn our attention to the terrestrial environment. Basin study financial resources did not permit much in the way of vegetation or wildlife studies; yet, these parts of the ecosystem are just as important as air or water and should be understood to a similar extent.

Finally, a look to the future. I see sunshine not just because I'm an impulsive optomist, but because we have improved our capability to manage through knowledge. Agencies are communicating with that knowledge, a sure sign of progress toward wise management. Knowedge may be power to some, but I consider it the key to a healthy future for northwestern Montana.

Andy Russell,
Box 790,
Turner Valley, Alberta.

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A CASE OF CONFLICTING INTERESTS

The first time I saw the upper end of the North Fork of the Flathead on the Canadian side of the International Boundary was in 1946. We were travelling due west along the boundary cut-line when we topped out on the ridge summit between Alder and Sage Creeks and paused to let the packtrain horses catch their wind. In front of us stretched a wide valley trapped between the main range of the Rockies to the east and the McDonal Range to the west - a rugged, pristine wilderness fading into the blue distance where the skyline was a jagged line of mountains. But when we rode down into it, we found that it had been used rather heavily in the past, for there was the the outline of a town staked out on the Canadian side of the line where the border crossed the river.. There was an old log customs house still standing and a timber bridge still in use. About three miles upriver there was a second bridge that was falling apart. A few miles farther up the valley was the site of s second town with a few abandoned shacks and a scattering of lot stakes. In between were bits and pieces of mining equipment like a heavy boiler we found in the midst of a thick stand of second growth miles from anything that even looked like a trail.

These were the artifacts of a coal exploation carried out by the Great Norther Railroad, which was preparing to develop this area to produce coal for their locomotives used on their line between Chicago and Seattle. But then a great discovery of coal was made in the Crowsnest Pass close to the Canadian Pacific tracks, so the Great Northern built a spur line up the Kootenai and the Elk to Fernie, B.C. to supply their needs and the North Fork project was abandoned.

Following two great fires that razed the forest in 1928 and again in 1935. The resulting masses of deadfall timber and regrowth of lodgepole pine as thick as the hair on a bear's back reclaimed the wilderness and offered some considerable challenge to our packtrain, but the river never changed and was then as now, a wonderful place for sport fishing. The whole valley teemed with wild game of all kinds. The meadows were stirrip deep in grass, peavine and clover and wild fruit abounded. Indeed, wild strawberries were so thick in places that our horses feet were red with the juice. Apart from a few trappers and a professional guide and outfitter, there were no human inhabitants. A few tourists came in summer from the south and east to camp and fish. It was magnificent wild country.

There have been changes over the years with roads to logging operations and now we are looking at a renewal of the interest in coal development with all its modern appertinances for turning some fine country into something resembling the cold, hard surface of the moon. True, there is the lure of quick profit, but can we afford the trade-off?

It is a very important question requiring concnetrated study of economics with a depth of vision going beyond the immediate dollar. For the north Fork is a river owned by two countries. State-side, it has been proclaimed as a National Wilderness River inviolate to dams, pollution or ant other intrusion that might effect its status. But if the coal development in British Columbia proceeds with open pit mining as planned, it will inevitably seriously effect the waters

of this stream on the U.S. side of the longest unguarded international boundary in the entire world. Anyone who doubts this need only take a long, hard look at the Elk River farther north in B.C. and compare it to what we knew of it a few short years ago. Open pit coal mining has virtually killed it and reduced it to a mere crooked line on the map resembling a dead snake killed on the road to so-called progress

Mr. Chairman, it is evident that our technology of proceedure has far out-distanced . our methods of taking what we need from nature without breaking it.- our vision to see beyond the advantage of the immediate dollar profit. We are not looking at the real long range effects of what is being planned or projevted in coal development on the upper Flathead. It is much more than just a project involving a mining company and a province and a state; it is the exercise of a principle touching people of two countries of strong national impact where a national monument is involved.on the United states side.

Knowing this I feel that we Canadians are not acting in the light of our usual principle, where nieghbors are concerned by even considering it. No matter where we live, none of us as individuals here would think of dumping our household garbage on the property of a nieghbor. Why then are we wasting our valuable time by coming here to discuss the pros and cons on disposing our industrial effluent, when we know it will seriously destract from the value of of our friends' national monument?

Some of you may think I am being to harsh on our position of Canadians concerned with our own intersts, when sometimes we are the ones who suffer. God knows a national monument does not necessarily need to be something so designated by the jurisdiction of the halls of government. For some reason, speaking in global terms rather than just

the local, we, the residents of this space ship called earth, repeatedly fail to look at the problems genertated by dumping pollutents carelessly into international waters and air in other countries. In Europe, it has become a pressing problem reaching dangerous proportions that may be too late to correct. People there are waking up t grave dangers to their forests, farms, buildings and the health of all animals including humans. In only ten years, 8% of Germany's forests, about 550,000 hectares, have been severely effects by sulphurodioxide fall-out from power stations and heavy industry. Two thirds of West Germany's fir trees are damaged. In the famed Black Forest, the spruces are dying. Forestry officials there state flatly that changes will occur in all their forests, that natural regeneration pwers are at an end and that action must be taken npw or their forests will be gone.

In Sweden and Norway water pullution from international air degredation through acid rain has been so heavy that many of their streams and lakes are virtually dead. The Atlantic salmon and trout fishery has severely degenerated with heavy loss to commercial and sport fisheries. In Sweden, where moose meat supplies one third of the meat consumption, every hunter gets a pamphlet with his hunting license warning against eating the livers. Livers. The livers of animals over six years old carry such a load of injested poisonous chemicals that eating them can cause severe illness and death.

Many people all over the world are suffering a total loss of natural immunity with extremely dangerous health complications.

I may sound as though I am taking a tangent leading off from the present issue, but I am not. The same principle is involved here. There is no profit in any kind of pollution and while it would be stupid to suggest we can eliminate it, we can and must be aware of it - we must really care - and do everything possible in every walk of

our endeavors to substantially reduce it. We Canadians can't afford to even consider doing something to the Flathead River which will not only degrade an American Wild River and by the same token, niether can the Americans tolerate short-cut industriaal methods that dumps acid rain on our country in quatities sufficient yo kill our lakes and streams down in the Shield country of Ontario and Quebec. We are not without blame here either, for we still have a lot of cleaning up to do in our own back yards. It is high time we all begand caring enough about our future to quit paying polócal and industrial lip service to the problem and really do something about it.

Too often our princes of industry and politics wit htier tubular vision can be compared to lightning bugs, which reminds me of a bit of verse:

"The lightning bug is brilliant,
But it hasn't any mind,
It wanders through creation
With its headlight on behind."

You American have demonstrated your care for being good nieghbors by pulling back from your interest in damming the Skaggit Valley of British Columbia. No we have the opportunity to do the same in the Flathead Valley. We can hope that the United States Government will again consider us in the Garrison project. It can be an encouraging beginning down a long tough road ahead to preserve the most imposrtant national monuments of future economic and human health that we can enjoy on both sides of our border.

Mr. Chairman, my thanks for the opportunity to speak here. I have spoken.

HEARING-JULY 6, 1983
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

Testimony of James A. Cumming,
Member of the Flathead Coalition

INTRODUCTION

My name is James A. Cumming. I have been a practicing attorney at Columbia Falls, Montana since 1947. I was one of the original members who founded Flathead Coalition late in 1974 and have been and still am one of the attorneys who have worked with Flathead Coalition in connection with the problems following on the considerations given by Rio Tinto Zinc, acting through its ultimate subsidiary, Sage Creek Coal, Ltd., to be located on Cabin Creek, immediately north of the border.

I.

It is a great pleasure and satisfaction to be here this day to testify before the Subcommittee on Toxic Substances and Environmental Oversight. Satisfaction, because at the inception of the efforts of Flathead Coalition in December 1974, the concern with the plans of Rio Tinto Zinc to open up an open pit coal mining venture on Cabin Creek was seen as irrelevant to the Montana way of life. After all Rio Tinto Zinc was a new name to all of us, and how could there be any threat from somebody who we hadn't even heard of?

Thanks to an alert and vociferous press in western Montana, disclosure of plans of this monster mining corporation brought a sudden awareness that living near the headwaters of Flathead River was no automatic guaranty of safety from the hazards of large scale mining development. The concern was heightened by awareness that the whole developmental process was to take place behind the borders of another sovereign nation and apparently beyond the reach of the environmental laws of the United States and Montana. However well advanced were legislatives efforts at that period, to cope with the effects of unconstrained resource development, it was obvious that the effect of those laws ceased at the international border.

The existence of a firm commitment to environmental protection on the Canadian side of the border was fervently hoped for, but not at all clear. Although many Canadians expressed such commitment, the laws of British Columbia and Canadians were such that loopholes appeared everywhere. No sure, or even probable, way to affect this mining development seemed to be at hand. In our favor was a long-standing Montana tradition of confronting our problems head on, and this was the spirit which lay behind the very earliest efforts that were undertaken by Flathead Coalition. It appeared likely that public perception of a danger to the North Fork of the Flathead would rank pretty low in priority, except for the natives. A determined effort at education in several, to us, esoteric fields, was urgently needed. One of the first and most urgent efforts was to begin a thorough study of the river system itself, to learn and to record the life of this river, and to appreciate in a scientific, verifiable way how it would be affected by coal-development.

Our initial perception was that any effort to counter this coal-mining threat would have to be as broad-based as possible.

This necessarily dictated a narrowing of our goals to the achievement of "zero pollution of the Flathead River" and stern resistance to any temptation to speak out on any other environmental matters. We did at one time set aside our rigid commitment to this single goal when it was perceived that plans to lease enormous tracts of Forest Service lands in the North Fork of the Flathead, and the South Fork, for oil exploration, likewise threatened severe pollution of these rivers. This seemed no time to be anything but adamant in our public stance, and so we undertook to stop the oil leasing program.

A number of factors combined to make our opposition successful. Certainly one great element in our success was the yeoman work done by then Representative Max Baucus, whose timely efforts resulted in strategic movement at strategic moments - resulting in early designation of the North Fork in the Wild and Scenic Rivers system, and early designation of the Flathead River for a "208" study.

Looking back on the history of Flathead Coalition, what comes through clearly to me is the completely ad hoc nature of our efforts. At no time did we ever have any master plan. As new challenges came up, they were confronted by the efforts of one or a few of our individual members who could see the immediate need for his or her individual skill and jumping forthwith into the breach. As we claimed a reserve of many highly talented people of exceedingly diverse abilities, we could, and still can, mount an unusually sophisticated solution to each of the many problems that were thrust upon us, all, it seemed, calling for crash programs.

The type of organization that we lucked into at the start turned out to be quite efficient for the handling of these diverse threats. From the start, we set about obtaining the joinder in our organization of as many, and as diverse, public service groups as possible, from such professional environmental groups as the Sierra Club and Montana Wilderness Association to several local Chambers of Commerce. Early on, we were able to welcome into our coalition several Canadian groups, who took early, active and very effective part in our efforts. This cross-border connection was extremely heartening to us, as this showed vividly and tellingly that far from all of the Canadian people were hell-bent for development.

You can't go very far in the history of Flathead Coalition without being struck by the picture of utter disarray and acrimony that perpetually haunted our meetings. With members in usual attendance ranging from a staunch John Bircher to an equally staunch left wing Socialist, bloodshed seemed to be imminent at all times. It is a great tribute to the dedication of members to our goal that the animosities and hostility were always eventually talked out, and effective organizational action ultimately taken.

The factor of luck cannot be overlooked. Not once, but a number of times, when a need arose, a miracle happened, and the need was met. In my own experience, I needed to know rather badly how well Rio Tinto Zinc performed in its copper mine operation on the island of Bougainville. A chance remark by a young man in a hotel lobby in San Francisco led to a conversation in which it came out that not only did he know of the operation there, he was intimately familiar with Rio Tinto's handling of the environment. With luck like that, who can fail?

Not the least of things going for us, in fact, a pretty wonderful, neighborly thing was the help given repeatedly by complete strangers, most of them bureaucrats and functionaries in Washington, D.C. These people frequently responded to telephoned pleas for help with great concern, generosity, and remarkable knowledge. It is impossible to overpraise the importance of their help.

II.

In spite of many resounding successes Flathead Coalition perceives the situation as extremely threatening. The most grave condition that we have been forced to deal with is that the 1909 Boundary Waters Treaty and the mechanism which it establishes for control over boundary problems has been steadily falling behind the times. While the Treaty has been greatly praised as a great step forward in settling border disputes between countries, it is time to recognize that the rest of the world is passing us by in some respects. Our long experience with the Treaty mechanisms, and the increasing visibility and definition of border problems, has meant that we have learned something of the Treaty's shortcomings. The time has now been reached when the Treaty is ripe for serious Congressional and Parliamentary improvement.

A great part of the objection to further amendments of the Treaty seems to boil down to reluctance to jeopardize the admirable ways in which the IJC has used the Treaty to expand coverage of certain problems, particularly by liberal interpretation of its jurisdiction over pollution problems and by mechanisms of investigation that have been truly remarkable. The high morale of those members of agencies who are seconded to become parts of working teams is an asset not lightly to be undermined. The functioning of the IJC as a single professional agency rather than as two contending nationalistic sections has been beyond anybody's expectations.

Nevertheless, the growing complexity of problems particularly in the pollution area, the increasing settlement in both countries in regions adjacent to borders, and the growing creakiness of the machinery and of the now-ancient principles behind the Treaty seem to demand a fresh look by Congress to see how the Treaty may be fruitfully and practically amended or supplemented.

One major problem is that the IJC is still required to get by with a 1909 working staff. The small permanent staff of the agency is barely sufficient for housekeeping duties. There should be a consideration of a greatly increased permanent staff along with a greatly increased budget so that the IJC will no longer be required to deal with every problem on an emergency basis. Much as the assignment of a watchdog function to the IJC has been a step that many people have had serious doubts on, a most serious deficiency in transboundary problems has been the simple ignorance of the things that are building up for the future. This certainly was the case with the Cabin Creek Mine. We understand that the Sage Creek concern made its initial applications in 1968 or thereabouts and thereupon had some six years of a secret development period to get a running start at the development. Somebody with a watchdog function would have caught this situation long before positions had become entrenched.

A second problem with the IJC has been that the countries involved have not given a thorough commitment to the IJC process.

The unavoidable impression has been that the IJC has been used from time to time in order to forestall a solution to problems rather than to meet them head on. Examples coming to mind are the Garrison Diversion Project and the Great Lakes Water Quality Agreement.

Particularly with the Garrison Diversion Project, notwithstanding the assignment of the problem to the IJC, the construction of the project went on full blast while the IJC was in fact considering whether it should go on at all. Congress itself was at fault in that matter in that it acceded to the demands of the Senators from North Dakota and cheerfully appropriated additional construction funds each year as requested. This might be good politics, but it's mighty poor border management.

It is therefore suggested to you that the Treaty be amended to provide that when a problem of serious proportions is placed before the IJC, that there be a moratorium while the problem is worked out.

Article Ten of the Boundary Waters Treaty provides that there may be arbitration of boundary waters problems if both governments agree. It should be noted that never in the long history of the Treaty and the IJC has this provision for arbitration ever been used. While we have been patting ourselves on the back in praise of the far reaching provisions of the Treaty, the European nations have gone on beyond us in many respects. Particularly as to arbitration the growing practice in Europe (e.g. the Nordic Treaty and the Rhine River Treaty) where arbitration becomes compulsory where only one party invokes the arbitration mechanism. I would like also to call attention to the proposed Treaty of the American Bar Association and Canadian Bar Association for the settlement of international disputes between Canada and USA. This Treaty apparently languishes somewhere in the procedures of the Department of State. It should be resurrected. If its provisions are not yet to the political will of the two countries, at least the provisions for compulsory arbitration ought to be considered as an amendment to the Boundary Waters Treaty.

Another provision of the Boundary Waters Treaty which deserves attention are the provisions for indemnification of persons in the exposed country whose property or own persons are damaged by or will be damaged by projects having transboundary effect. This provision has been allowed to fall into disuse. Instead, the two countries have engaged in a process of pretense that the adjustment as to the benefits flowing from a development project can be so designed as itself to be compensation for the transboundary effect. This is not realistic in that no adjustment of benefit-sharing will take care of the great damage that individuals may sustain. This ties in with the provisions mentioned above for continuous watchdog functions, which should include development of guidelines and principles that would allow for more realistic assessments of damages.

A related question should also be considered which follows a principle which has been followed with interest by scholars in the international law field. That is the principle that in a country wherein a development by a private firm has adverse transboundary effects, the government of that country is itself subject to a claim for damages made by citizens of the exposed country. Under this principle, people in US and Montana who suffer from the Cabin Creek Mine would have a probable claim against Canada and probably also the government of British

Columbia, as well as a claim against Sage Creek Coal. This appears to be a relatively new principle, logically and realistically expansive of old and settled rules. It is one that could perhaps be more carefully formulated in any new change to the Boundary Waters Treaty. Certainly the presence or absence of such a provision in the Treaty will not affect a decision of Flathead Coalition to bring suit against any or all of the above, but its a principle that needs public expression and what better place can there be than in an area where adverse effects follow so readily from a breach of the treaty law.

The example of foot dragging on the part of one government or another is difficult to prove deliberate even when the suspicions are strong. A recent GAO report on the Great Lakes Water Quality Agreement has pointed out that out of seventeen requests by the IJC from the US government, either for necessary information or in follow up IJC recommendations for action, in only three cases have responses by the US government resulted. While it may be that this is inadvertant, the perception from northwestern Montana is that the IJC has been deliberately rendered ineffective as a political concession to certain power interests. With such a perception, its natural for those of us close to the legal problems involved to be skeptical of reliance on the IJC. This is a large part of the reason for the considerable interest that the Flathead Coalition has had in preparing for direct litigation in the courts. Now that direct court action seems to be both possible and feasible, citizen action groups may unintentionally become involved in transboundary matters in court which could better be handled by the IJC, were it not for this one factor. Steps should be taken to improve the Treaty so that the treaty system does not become a "bargaining chip" in the game of power politics.

One way in which this might become a moot point would be if the new Treaty sets up certain strong presumptions that when this type of foot dragging takes place, the presumption shall arise that there has been a breach of Treaty by the country doing so and perhaps certain presumptions as to the damages which are thereby inflicted.

Perhaps this increasing circumvention of the IJC process by both countries contributes to the growing probl m of keeping the positions of Commissioner and senior staff filled, and filled for long enough that jobs will be learned and effective functioning will take place. The coming-and-going of commissioners in both sections, but particularly the US, has resulted in great loss of continuity and experience. Congressional investigation in depth of this problem could hardly avoid having a healthy effect.

No doubt a great many other improvements can be made to the Treaty, for example "pollution" could be more clearly defined and perhaps broadened. The power of IJC to initiate investigations could be made firm. The IJC might determine priorities of water use by area or watershed rather than having to deal with the ancient list of priorities established in Article 8 of the Treaty. The retention of jurisdiction for IJC follow-up activities could be included in the Treaty. The formulation and publication of principles respecting development could make public firm guidelines that might forestall many disputes which are now invited by reason of the uncertainty in this field. Involvement of the public could well be promoted were the IJC sufficiently funded to carry out public information activities, including an in-house magaz.ne and formal reports of findings

and decisions. The power of IJC as to pollution should be plainly specified to include potential pollution.

In all matters the Congress should proceed carefully as there are many aspects of the IJC which are important and admirable in function. Those aspects should be identified and strengthened.

Respectfully submitted,

James A. Cumming
Attorney for Flathead Coalition

HEARING-JULY 6, 1983
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON TOXIC SUBSTANCES AND ENVIRONMENTAL OVERSIGHT

Testimony of Jon L. Heberling,
Member of the Flathead Coalition

INTRODUCTION

My name is Jon L. Heberling. I am an attorney in Kalispell with the firm of McGarvey, Lence & Heberling. I have been one of the attorneys for the Flathead Coalition since 1976. I have held the Flathead Coalition seat on the Flathead River Basin Study Steering Committee since the beginning of the Study.

The Flathead Coalition wishes to thank Senator Baucus for his lead role in establishing the Flathead River Basin Study, and his continuing efforts to ensure that Glacier Park and the Flathead are preserved. We note that Senator Baucus has also been sensitive to the needs of the Canadian side, as he has introduced the bill to control acid rain pollution.

HISTORY OF THE FLATHEAD COALITION

In 1975 we were faced with the Cabin Creek coal mine, perhaps the greatest threat to the Park and the Flathead in recent times. This is a classic case of transboundary pollution. All the dollar benefits go to the Canadian side. Almost all the damage flows to the U. S. side. So in 1975 the Flathead Coalition emerged as a Montana non-profit corporation, made of 28 service groups. This included the Wilderness Association, Sierra Club, B. C. Wildlife, Chambers of Commerce, Lions Club, Flathead Medical Society, Flathead Lakers, the Confederated Salish & Kootenai Tribes, and the League of Women Voters. This diversity shows the breadth of support for protection of the Flathead. The widespread support is not unusual in Montana, as polls consistently show that Montanans strongly support protection of Montana's resources. See attached summary dated 6/23/83.

The Flathead Coalition is well aware of what coal mines do. We know that attempting to place a coal mine just seven miles from Glacier Park on the headwaters of the river which forms the Park boundary will never work. What coal mines do is dramatically shown in photos from the official reports of the British Columbia Ministry of the Environment, regarding violations at the four coal mines in the Elk River Valley next door to the Flathead. The mounted photos show the Elk River running black with coal fines, the turbid discharges from the sediment ponds, massive dump failures, and lost fisheries.

The Flathead Coalition has been active and successful. Our major goal of obtaining the baseline data for protection of the Flathead has now been achieved through the Flathead River Basin Study. Back in 1975 we successfully lobbied for a bill which says Canadians who pollute Montana waters may be sued in Montana courts. If the company proceeds with the mine, the company will be sued right here in Kalispell. Our problems with this mine attracted the attention of an international law conference in San Francisco. An analysis of strategies in international law was published for us at the University of California at Berkeley. Arbitblit, "The Plight of American Citizens Injured by Transboundary River Pollution", 8 ELQ 338 (1979). The Flathead Coalition assisted Senator Baucus in obtaining the $2.5 million for the Flathead River Basin Study. In pursuit of our goal of zero pollution on our side of the border, in 1976 we successfully appealed oil and gas leases which had insufficient environmental stipulations. The result now is oil and gas leases with much better stipulations attached.

In 1982 the Flathead Coalition began a new round of public education. We presented our slide show and mine analysis to 25 service groups. We birdogged the issue. Wherever it appeared, we did. As an example, John Roberts, Minister of the Environment for Canada, delivered an excellent address to the 50th Anniversary Celebration for Waterton-Glacier International Peace Park. Descending from the platform he was greeted by six members of the Flathead Coalition. We secured from him a promise of review by the federal government in Ottawa.

Our enormous petition drive is still underway. We hereby enter into the record copies of the 5,600 petition signatures to date. The petition reads:

> Please do not allow Sage Creek Ltd. to build an open pit coal mine at the confluence of Howell and Cabin Creek in the Flathead Valley of British Columbia until it can be proven that the resulting six square miles of disturbed land will not pollute the North Fork of the Flathead River, the Flathead River, and Flathead Lake with silt and sediment from overburden runoff; and that the proposed mine in its burning of seven tons of coal per hour for drying washed coal will not pollute the air quality of Waterton-Glacier International Peace Park which is six air miles away. Thank you.

We have submitted the 5,600 petition signatures to the Ministers of the Environment for British Columbia and for Canada.

THE MONTANA COMMENTS (See attached summary entitled "Fact Sheet")

Governor Schwinden has played a major and effective role in voicing Montana's concerns over the mine. Governor Schwinden obtained for Montana the opportunity to enter the British Columbia environmental process, and to enter formal comments on the mine. On short notice a team of Montana scientists prepared a masterful analysis of the mine plan using the Flathead River Basin Study data. The Montana comments on the mine conclusively demonstrate that the mine will be damaging to the Flathead drainage. The core problem is the mine site. The mine plans show strip mine pits a mile long and 1,000 feet deep, with even larger waste dumps. The pits and dumps cannot be placed within 90 meters of Cabin Creek and Howell Creek with "no damage to the local or downstream environment". It can't be done. This claim of "no damage" forfeits the credibility of the company plan.

1. Fisheries

The Montana comments point out that the 1,000' deep pits will undermine the creeks and will dewater the creeks. Waters will seek their own level down into the pits. The Montana comments find that sediments and dewatering will eliminate the fisheries. Unfortunately, Howell Creek and Cabin Creek are the finest, most dense trout spawning areas in the Flathead drainage. Ten per cent of the bull trout in the entire Flathead drainage will be eliminated. We repeat. Ten per cent of the bull trout in the entire Flathead drainage will be eliminated. (Show raised topog.). The result will likely be even worse, as the calculations in the Montana comments politely assume the mine will be built and will function to 100% of design. Murphy's law will ensure a worse result. If anything can go wrong, it will.

2. Water Quality

The company claims no outflow from the settling ponds for the majority of the year. The Montana comments point out that groundwater flows are severely underestimated. Instead, the ponds will discharge

and the North Fork will be "visually turbid" most of the year. Worst of all, the total phosphorus crossing the border will be equal to 10% of the total annual phosphorus input to Flathead Lake. The Flathead Basin Study found that phosphorus is the key catalyst to decay in Flathead Lake. The lake is at a threshold where decay may accelerate if phosphorus is not reduced.

The company reclamation plan is 20 pages of unsupported assurances. The Montana comments find the plan "extremely poor compared to Montana standards". Reclamation on steep slopes, with little topsoil, with a short growing season, and 50 inches annual precipitation, will be as difficult as reclaiming Butte's Berkeley Pit. The result may be that the ditches and settling ponds will have to be maintained forever. Literally forever; with hundreds of years of pollution to the Flathead.

3. Wildlife

The company admits there is little that can be done about the loss of wildlife habitat.

We note that the 1983 legislature designated the grizzly as the state animal, after hundreds of schoolchildren descended upon the Capitol with songs and drawings of bears. The area on the U. S. side of the border has been found to be the best grizzly habitat in the lower 48 states. The density is about one bear per square mile. There are "no vacancies". This means that the number of bears displaced by the mine will have to fight other bears for territory, leading to the demise of the younger bears.

During the first two years of the mine there will be a construction camp of 1,500 workers. This will result in enormous hunting and fishing pressure. It is a fantasy to suggest that this can be controlled.

4. Air Quality

The mine's coal dryer will emit 2,150 tons per year of particulates and 741 tons per year of SO2. The air pollution will violate Glacier National Park's PSD air quality standards. If the mine were on the Montana side of the border, it could not be built. This amount of pollution will use up the "increment" in the airshed, and guarantee no project on our side of the border.

5. Townsite

The 1982 mine plan eliminates the 1,000 person townsite at the border. BUT. . . we point out that the townsite will follow the mine. The company proposes a two-year construction townsite for 1,500 workers. Then this "town" will be folded up and a permanent workforce of 500 will be bussed everyday to and from Fernie some 60 miles away! We have our doubts. Elsewhere in the U. S., workers cross the border with permits. Why not here? The result would be a coalstrip-type boom town at the border. Some consider the border area of Glacier Park to be the most spectacular part of the Park.

THE MINE PROJECT IS HIGH RISK FOR MONTANA, FOR THE B. C. GOVERNMENT AND FOR THE COMPANY.

High risk for Montana

For all the above reasons, Montana is at risk. The Flathead's tourist industry is threatened. Glacier Park draws 1.7 million visitors each year. Tourism provides a solid 20% of the jobs in the Flathead economy.*1 Tourism has accounted for 90% of the net new basic

*1 FRBEIS - Economic Assessment-Final 1982, p.12.

jobs over the period 1968-1978.*1 Property values along the Flathead River and Flathead Lake are dependent on water quality. These values run into the billions, and dwarf the value of any coal mine.

The Waterton-Glacier International Peace Park was designated the world's first International Biosphere Reserve. The biosphere reserve is to serve as a genetic bank. It is to remain as nature made it. As we are painfully aware, Glacier Park is not an island. It is sadly dependent on activities in adjacent areas. Glacier Park is at risk. The 1980 State of the Parks Report to Congress found Glacier Park the most threatened park AND found that the Cabin Creek mine is the greatest threat to Glacier.

High risk for the government of British Columbia

1. Subsidies.

B. C. traditionally provides subsidies to mining areas for roads, power, and rail improvements. The cost of these subsidies in the far northeast coal block is about $10 per ton. If coal exports at $85 per ton, this is a healthy subsidy. We understand that B. C. has no more money for subsidies. It would be dangerous for the B. C. government to approve the mine at this point, and commit to further subsidies.

2. Destabilization of the four Elk River Valley mines.

The Flathead mine would compete with the Elk River mines in the same coal export market. There may be no increase in total exports, just a different cut of the pie. The Elk River mines are nowhere near full capacity. Workers are laid off. One more mine could destabilize the East Kootenay economy.

3. Risk of opening a new drainage.

B. C. would face the loss of a fabled hunting and fishing area, and open itself to conflict with Waterton-Glacier International Peace Park.

4. Reclamation cost.

The B. C. government risks having to absorb the huge cost of reclamation. As of 1982 Sage Creek Coal Ltd. was a shell corporation with two employees. This shell is what B. C. could be left with if the company abandons the mine. With only a $1,000 per acre bond requirement, it will be cheaper for the company to simply abandon the mine site.

5. Risk of an international incident.

Approval of the mine will trigger an international incident. The company and the B. C. government could never have anticipated the depth of opposition to this mine, or the amount of scientific data now available to show the harm the mine will do.

High risk to the company.

1. Japan has cancelled 25% of its northeast coal block contracts.

2. The company has no contracts for the coal. The market is soft. The remoteness of the mine site will increase production costs, making it less competitive.

3. The major risk is that the company might actually have to pay the cost of the damage done by the mine. At the public meeting on

*1 Id., p.5.

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4/27/82, Herb Pakrul, President of Sage Creek Coal Ltd., and Vice President Rio Algum Ltd., promised to pay for any damage downstream. When the company sees the enormity of the cost, it may shrink from such a commitment. (We note that this is the same company that cited expense in its refusal to send a copy of its Stage II Environmental Assessment to the Forest Service!)

REQUESTS OF THE FLATHEAD COALITION

All of the above risks make the Cabin Creek mine a marginal proposal. Because it is marginal, we can take action which may indeed make a difference.

1. Fund monitoring.

We request funding for the monitoring necessary to keep the Flathead Basin Study data current.

2. Zero pollution.

We request a Senate resolution endorsing zero pollution across the border.

3. Threats to Glacier.

We request a Senate resolution directing the Department of Interior to pursue threats to Glacier National Park.

4. International Biosphere Reserve Treaty.

We request an International Biosphere Reserve Treaty on the Waterton-Glacier International Peace Park. This would be a special treaty to protect a special area. Its terms would enable the two parks to establish and implement an international management plan. We further suggest buffer zone protection measures similar to those proposed in the National Parks System Protection Act of 1982. HR5552. There may be a moratorium on the mine until the management plan is in place. We must deal with the consequences of drawing a straight line border at the 49th parallel. This straight line cuts across ecosystems and drainages. As it severs this International Biosphere Reserve, special efforts are necessary by both countries to coordinate planning for park protection.

On the U. S. side there have been a number of special efforts to protect the park. The North Fork and Middle Fork have been designated Wild and Scenic Rivers. $6,700,000 has been spent on land acquisition to conserve the riverfront. The Great Bear Wilderness was created to link the Glacier Park and Bob Marshall ecosystems. The Flathead National Forest withdrew a 20 million board foot timber sale on the border. The area is now to be one of special management for wildlife. This action was due in part to the cumulative effects upon the area, including the effects of the Cabin Creek coal mine proposal. Likewise the Federal Highway Administration has cancelled a proposal to pave the North Fork Road, also due in part to the cumulative effects upon area wildlife in Glacier Park.

The U. S. has taken these extra precautions to protect the park in good faith. Canada may find it beneficial to join the effort, and participate in an International Biosphere Reserve Treaty.

Respectfully submitted,

Jon L. Heberling

Jon L. Heberling

JRC 23 JUNE 83

SUMMARY: Polls dealing with environmental quality.

I. Business Week/Harris Poll. January, 1983.

(A) Reported that support for a stricter Clean Air Act and a more stringent Clean Water Act have sharply risen from 1980.

(1) Clean air: was 29%, now 47%.

(2) Clean water: was 52%, now 61%.

(B) Percentage opposing rollbacks up from 80% to 86%.

(C) "What caused the dramatic shift of opinion? Harris says it was 'the intervention of a political event,' namely Americans' dismay over what they perceive as the hositilty of Interior Secretary James G. Watt and (former) Environmental Protection Agency Administrator Anne M. Gorsuch to the laws they are charged with enforcing."

II. "Trends in Public Opinion on the Environment," reported in Environment magazine, May, 1982.

(A) 67% of those responding to a Sept. 1981 CBS/New York Times Poll agreed that "We need to maintain present environmental laws in order to preserve the environment for future generations." In the west, 69% said yes.

(B) In 1974, a Roper Poll asked respondents to rank several issues, asking "Which two or three are you personally concerned about today?" 12% chose pollution of air or water. In 1981, 10% chose air or water. The difference is not significant.

(C) The CEQ's 1980 report, "Public Opinion on Environmental Issues," concluded:

> "Although the state of the environment is no longer viewed as a crisis issue, strong support for environmental protection continues. There is no sign of the backlash which had been predicted once the costs of significant environmental protection became known."

III. "Montanans and Wilderness Issues," a Montana Poll conducted in the summer of 1982.

This poll indicates that Montanans support established wilderness areas, but are ambivalent toward (a) additional wilderness in Montana, and (b) protecting areas next to wilderness. They do oppose developing resources in wilderness.

IV. Flathead County Public Attitude Survey, 1980.

(A) Question 23: "Rank the following...in the order of importance you think they should have as criteria for future land use:

4 Getting the most out of the land for the most people.
*1 Maintaining a pleasant living environment.
5 Providing additional recreation areas.
2 Protect environmentally sensitive and critical areas.
3 Promote energy efficient developments.

V. Authors and Anthropologists services poll, August 1982.

(A) Asked Flathead County residents whether "Wilderness areas should be opened to oil exploration.

50% disagreed

29.4% agreed

20.6% didn't know

FACT SHEET

By Jon L. Heberling

The following summarizes the 126 pages of the Montana Comments transmitted by letter of Governor Ted Schwinden dated 5/13/82.

I. AIR QUALITY

The mine will periodically eliminate the pristine air quality in Glacier National Park, and will cause violations of Montana and Federal air quality laws. The air quality monitor west of Glacier Park at the Canadian border has shown some of the lowest particulate levels ever recorded in the U.S. Mine pollutant sources include wind erosion from disturbed areas and coal piles, blasting, hauling and dumping of overburden, dumping of wastes, dust from haul roads, and tons of dust and SO2 from the thermal coal dryer.(Montana Comments, MC I-1). The Montana Air Quality Bureau re-ran the company data, with totals of 2,150 tons/yr. of particulates and 741 tons/yr. in SO2. The computer box model projected a particulate level of 279, as compared to the Montana legal level of 200 under the Clean Air Act. The projected air pollution levels from particulate and SO2 violate the Class I air quality standard for Glacier Park in five of seven categories (MC I-4). The inversion episode air quality projections show air pollution levels in Glacier Park similar to those in Missoula during December alerts. The same analysis and controls required for U.S. protection of Glacier Park's Class I air quality should be done on this international project.

II. WATER, RESOURCES AND AQUATIC ECOLOGY

Coal strip mines disturb large areas, leading to erosion, sedimentation, and toxic metals water pollution. This mine is no exception. The company consultants claim the mine design will "insure that no damage is imposed on the local or downstream environments by the development." *1 No mine has ever caused "no damage" to water quality. It is silly for Sage Creek's consultants to suggest otherwise. The mine area is one of high precipitation, 50 in. per year (MC III-1, v). This is three times the Kalispell annual average. The glacial till soils are prone to erosion and sedimentation. The company's design for settling ponds and diversion ditches is based on "fail-safe" assumptions and incorrect data, and may have to be maintained forever. The Montana Comments predict "significant sedimentation and dewatering of Howell Creek" (MC vi) and state that the mine plan "poses significant threats to water quality and quantity." (MC-IV-6)

The 1000 feet deep pits and the deep contaminated water ditches dip well below the level of Howell Creek and Cabin Creek. The pits and ditches will likely intercept groundwater aquifers, meaning that the creeks could be DEWATERED and that the contaminated waters in the pits will definitely need to be pumped out (MC vi, II-1). 90% of the materials mined will be "overburden" or waste. Less than 10% of the materials mined are coal. Exposed overburden in contact with water causes contaminated waters, which must be treated in settling ponds. Likewise, the company design plans to have precipitation percolate through the waste dumps. This will produce contaminated waters. Amazingly, the company data includes few tests of the overburden, and the resulting contaminated waters. (MC iii, II-5 & 6)

*1 Transcript of Sage Creek Coal Public Meeting 4/27/82, p. 15.

The company consultants claim that the settling ponds will not discharge during the majority of the year. The Montana Comments point out that groundwater flows intercepted are "severely underestimated." (MC II-1), and that the settling ponds will discharge on a "regular basis." The company consultants claim that the settling ponds will work to 80-97% efficiency, but this claim is based on literature citations from Appalachia, not upon data at the mine site (MC II-11). The company consultants chose the most optimistic set of assumptions on reclamation, and conclude that impacts on water quality are "minimal." The Montana Comments find this prediction of minimal impacts "unfounded." (MC II-9)

The Montana Comments demonstrate a number of scenarios based on degree of reclamation success. The Montana Comments also doubt the feasibility of reclamation at this site on 26° slopes. Based on the intermediate set of assumptions on the effect of the settling ponds, increase in the mine site sediment load is projected (MC III-33). Even using the company's "severely underestimated" groundwater flow figures, the North Fork at the border will change to "visually turbid" from Oct. to Mar. (MC II-13), with a total phosphorus increase of 83%. (MC II-14) The phosphorus increase crossing the border totals about 10% of the annual input to Flathead Lake! (MC II-15)

Although the sulphur content of coal is low, there are a number of sources for acid mine drainage and toxic metals pollution. The tests of coal from seam #4 show a pH of 5.0, which would be damaging to water quality. (MC-II-5) Moreover, the Montana Comments find a substantial threat of nitrates from blasting leading to algae blooms and winter stagnation in the settling ponds, turning the process anaerobic, and causing release of nutrients into the Flathead drainage. Nutrient-caused algae blooms show in the streams below the B.C. coal mines near Sparwood, B.C. Anaerobic conditions in the settling ponds may also mobilize metals to toxic levels. (MC iii, II-8, II-15)

The mine design balances upon a delicate set of assumptions. A Montana mine proposal would be obliged to base its design on hard data. The company's "optimistic assumptions" are not well received on our side, and in fact, using company data, the Montana Comments demonstrate substantial threats to water quality in the Flathead.

III. HYDROLOGY AND GEOLOGY

Although the Montana Comments generally agree with the company calculation on flood flows, several assumptions appear where site specific data should be used. The company omits site specific data on snow pack, temperature, precipitation and soil and overburden infiltration and erosion capacity (MC III-15, III-30). The company data underestimates the 50 inches annual precipitation by half (MC III-1).

Major problems are encountered in the company calculations of how well its reclamation methods and settling ponds system will deal with sediment and expected flows. The Montana Comments set forth a number of scenarios based on the impacts of varying degrees of reclamation success. The extremes are total success (the company assumption) and total failure. At total success, the increase in sediment load to the North Fork at the border is 1% (MC III-29). At total failure, the increase in sediment load at the mine site is 120%. (MC III-36) At 50% success (half the dump in mining areas re-vegetated), the increase is 58%. (MC III-33). Even a 50% success rate during mining may be a generous assumption due to the extreme difficulty of reclaiming this site. (MC III-34). The 58% increase would mean that the North Fork would run murky year around. Whereas the company assumes it can abandon the mine site after the 21-year mine life, in fact, even at the most optimistic level of assumptions, continued maintenance of the drainage network and settling poinds would be required. (MC III-25)

IV. FISHERIES

The company consultants recognize the high value of the fisheries in Howell Creek and Cabin Creek. The company claims the mine will have "no effect" on Howell Creek, even though huge pits and dumps come within 90 meters of the creek, even though bridges will cross the creek, and even though adjacent contaminated water ditches and both the 1000' deep pits will cut to levels below the creek and flood plain. In essence, the company claims a blue ribbon trout stream can meander through the mine complex.

The Montana Comments disagree with the company's "no effect" conclusion. "Significant sedimentation and dewatering of the critical Howell Creek bull trout spawning area would occur if mining activities are conducted as planned." (MC vi) Loss of the spawning area at the mine site would result in an annual loss of 3,000 bull trout (18" fish) to the Flathead Fishery (MC IV-2), or about 10% of the entire Flathead Bull Trout Fishery (MC ii).

Sedimentation is a threat to the fishery, as fine sediment fills the stream bed gravel spaces necessary for fish spawning, fry survival, and juvenile overwintering.(MC IV-12) The settling ponds will not trap the fines. The rock berm adjacent to Howell Creek will increase sediment loading and will channelize the creek (MC vii), increasing stream velocity and reducing spawning habitat quality. The contaminated water ditches adjacent to Howell Creek pass through glacial till, which is highly erodible. The ditches themselves may become significant sources of sediment (MC IV-5, III-24), requiring seasonal maintenance to remove sediment and ice buildups. With all this activity on the edges of Howell Creek and Cabin Creek, it is silly for the company to assume that no heavy equipment will push or track sediment into the creek.

Worst of all for the Howell Creek fishery would be the seasonal dewatering of the creek due to interception of groundwater aquifers by mine cuts, and the interception of lateral subsurface stream flow by the contaminated water ditches. (MC vi, IV-8)

The company admits that the increase in angling pressure due to the on-site work force of 500 would have significant impact on the fishery. The company makes no commitment to ban fishing at the mine site.

The company's claim that the fishery will be unaffected by the mine is patently incredible. This claim diminishes the credibility of the entire Stage II application. The 58% or more increase in sedimentation based on the generous 50% reclamation success assumption, would have severe impacts on the North Fork Fishery as a whole.

The Montana Comments carefully demonstrate that the fisheries work in the Stage II report is "inadequate and statistically incorrect."

V. TERRESTRIAL WILDLIFE.

"The addition of the mine to the region is a classic example of the cumulative effect concept." (MC V-3). In addition, enormous areas have been logged recently on the B.C. side of the border. These changes

in habitat bring "a change in the basic quantities and qualities of the regional wildlife resource. That change will significantly contribute to the insularization of Glacier National Park, a World Biosphere, a process that in itself would jeopardize certain resident wildlife species." (MC V-4)

The 41 mile road from the mine to Morrisey traverses important habitat and corridors, including a key 6-mile ecotone. The company acknowledges the increase in road kills, and acknowleges that little can be done to mitigate the loss of wildlife habitat.

The area is key habitat for the threatened grizzly bear. Eight to 16 bears will be displaced. "This would tend to DESTABILIZE the area population, with the effects extending into Glacier National Park." (MC V-1) Moreover, grizzly bears tend to remain in their habitat despite human encroachment, leading to bear/man confrontations, and the demise of the bears.

Displacement of 10% of the area moose population is projected, together with elk, deer and small mammals. "It is not realistic to expect adjacent habitats to absorb increased wildlife numbers." (MC V-1)

The enormous increase in human presence and poaching will result from the arrival of the 500-man work force. The effects of increased human presence are "largely unmanageable." (MC V-1) One result may be to close the entire area to hunting, since the effects of the mine and increased human presence may eliminate the harvestable surplus of wildlife.

The Montana Comments question the company conclusions on wildlife, since they are based on only three weeks' field work.

VI. RECLAMATION

The part of the company's plan most important to Montana turns out to be the plan's weakest link. "The plan is extremely poor compared to Montana standards." (MC VI-1) "A proposed reclaimed slope of 26° raises serious questions whether these slopes can be stabilized and reclaimed." (MC VI-1) The reclamation plan presents so little data and such a low level of commitment that the Montana team found it "extremely difficult" to comment.

The company intends to abandon the mine site at the end of the mine life. Since no bond is apparently required, it may be cheapest for the company to dissolve itself and simply abandon reclamation at the end of the mine life. The company president, H. Pakrul, has promised to spend whatever is necessary in mitigation to insure that there is no damage locally or downstream.*1 However, the company may later resist the financial consequences of such a commitment. Our hope is that the Canadian Minister of the Environment will intercede under the International Rivers Improvement Act to require that trans-boundary pollution controls on this project meet the more realistic data submittal and reclamation commitment of Montana law. This would be a major stride for the protection of the Waterton-Glacier World Biosphere, and the Flathead drainage. The problem would remain of insuring that the company builds the mine and performs reclamation to its design commitments.

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*1 Sage Creek Coal Public Meeting, 4/27/82, Transcript, pp. 31-32

PLEASE DO NOT ALLOW SAGE CREEK LTD. TO BUILD AN OPEN-PIT COAL MINE AT THE CONFLUENCE OF HOWELL AND CABIN CREEK IN THE FLATHEAD VALLEY OF BRITISH COLUMBIA UNTIL IT CAN BE PROVEN THAT THE RESULTING SIX-SQUARE MILES OF DISTURBED LAND WILL NOT POLLUTE THE NORTH FORK OF THE FLATHEAD RIVER, THE FLATHEAD RIVER, AND FLATHEAD LAKE WITH SILT AND SEDIMENT FROM OVERBURDEN RUNOFF; AND THAT THE PROPOSED MINE IN ITS BURNING OF SEVEN TONS OF COAL PER HOUR FOR DRYING WASHED COAL WILL NOT POLLUTE THE AIR QUALITY OF WATERTON/GLACIER INTERNATIONAL PEACE PARK WHICH IS SIX AIR MILES AWAY. THANK YOU.

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The above petition, accompanied by 6,200 signatures was submitted by Mr. Heberling; they have been retained in the committee files.

26 June 1983

Dear Senator Baucus,

I am concerned with the effects the proposed Cabin Creek coal mine may have on the wildlife and aesthetic values of the Flathead valley. The Cabin Creek area supports populations of elk, moose, whitetail and mule deer, wolverine, lynx, cougar, wolf, black bear, and grizzly bear. Present human impact on the North Fork Flathead River area in British Columbia consists of moderate recreational use with no human habitations. In this relatively undisturbed area, the influx of several hundred coal workers, heavy machinery, and coal-slurry run-off will undoubtedly impact the wildlife locally in British Columbia and south into the Flathead River valley of Montana.

I was employed by the Wolf Ecology Project, University of Montana, in the North Fork drainage from 1979-82. Project personnel captured and radio-collared an adult female wolf within 2 miles of the proposed Cabin Creek mine site. Her movements were monitored for 16 months via radio-tracking her from a small airplane and on the ground. During that time she was located 3 times on Dally Hill (South Hill), which will be leveled according to mine plans, and was frequently found in the surrounding Cabin Creek/Howell Creek area and the nearby North Fork river bottoms. Establishing a coal mine and accompanying development will cause this wolf, as well as elk, grizzlies, and many other species to abandon this prime wildlife habitat.

Historically, wolves occupied the North Fork drainage in a stable, low-density population. However, extensive trapping and predator poisoning campaigns during the 1940's and 50's nearly extirpated the wolf populations of Glacier National Park and the Flathead valley. Thirty years later, the wolves have slowly begun to make a comeback. During the course of the study by the Wolf Ecology Project, only 1 wolf was known to inhabit the North Fork drainage. However, in June 1982

an adult male wolf was captured and released 4 miles north of the international boundary in the North Fork area. Two weeks later a litter of 7 wolf pups was observed near where the male wolf was captured. This was the first known litter of wolf pups to be produced in the North Fork in many, many years. Several people, including myself, observed the pups throughout the summer.

Recent studies indicate that there is an adequate prey base to support many more wolves in the North Fork. Why has the wolf population not recovered more quickly? The main facotr retarding wolf recovery is human interference in 3 forms: 1) human encroachment on wolf habitat, 2) anti-wolf sentiment, and 3) mistaking wolves for coyotes and killing them. During the past 3 years, at least 2 wolves have bee killed in Montana, despite protective legislation. Most of these animals were probably dispersers from Canada seeking an unoccupied area in which to set up a territory.

If we are to have successful natural wolf recovery in Montana, we must protect wolf habitat and reduce or eliminate human access into these areas. Reducing chances of human-wolf encounters will reduce the number of wolves killed accidentally or otherwise by hunters, trappers, and vehicles. The North Fork valley appears to be the main corridor by which wolves may become re-established in Montana, through animals leaving higher-density wolf populations in southeastern British Columbia and travelling south through Glacier National Park, and the Great Bear, Scapegoat and Bob Marshall Wilderness Areas.

There are many reasons to prevent the establishment of the proposed Cabin Creek coal mine, including air and water pollution of the Flathead River system, development and destruction of prime wildlife habitat, and setting a precedent for future coal mining proposals in this rich ecosystem. I will let the hydrologists, lawyers, geologists, fisheries and wildlife biologists, and other professionals speak up in their respective fields of expertise. As a wolf researcher,

I can state that the proposed Cabin Creek coal mine will be detrimental to the recovery of the wolf population in the North Fork Flathead drainage, based on my field data.

Please include my comments in the Congressional Record.

Sincerely,

Diane Boyd

Diane Boyd, Wildlife Biologist

ASSOCIATED ORGANIZATION
National Parks & Conservation Association

Coalition for Canyon Preservation

Box 422
Hungry Horse, Montana
59919

July 8, 1983

Senator Max Baucus
Senate Committee on the Environment
and Public Works
1107 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Baucus and Committee members,

The Coalition for Canyon Preservation is a non-profit educational resource and research organization dedicated to protection efforts of the Glacier National Park ecosystem. The CCP functions as a citizens' action group as well, an associated organization with National Parks and Conservation Association based in Washington, D.C.

Members of CCP were recently in attendance at the July 6, 1983 oversight hearing held in Kalispell to review results of the Flathead River Basin Environmental Impact Study and obtain official and public testimony and/or comments on the impacts of the proposed Cabin Creek Coal mine. Please enter this comment into the public records for that Committee hearing as an addendum to the hearing transcript.

The CCP remains opposed to the proposed Cabin Creek Coal Mine development for the following reasons:

1) The coal mine poses the greatest current threat to Glacier National Park and the designated North Fork and Middle-Fork of the Flathead Wild and Scenic River System.

2) The mine will cause obstruction and/or a movement barrier to international migration of threatened Grizzly. The industrial activity will create further habitat isolation for the Glacier Park population. The future integrity of the upper Northern Continental Divide Grizzly Bear Ecosystem depends upon an open travel corridor to connecting Canadian habitat.

3)The proposed industrial mine is not in keeping with the biosphere concept. Glacier National Park was designated as a World Biosphere Reserve in 1974, a designation by the United Nations calling attention to the importance of retaining it as an area for ecological study where man's total impacts have been minimal. 92% of Glacier Park is managed as wilderness, including the northern portions adjacent the proposed mine location.

4) The site-specific impacts of the mine will probably result in the loss of the few remaining endangered wolves near the northwestern corner of Glacier, will displace the living area of approximately 10 Grizzly, and will result in the eventual loss of 10% of the entire Bull Trout fishery in the Flathead Basin because of the demise of the Howell Creek spawning area.

5) The water quality impact of the proposed mine is not in keeping with the Wild and Scenic Rivers Concept. The designated North Fork of the Flathead would likely run murky the year around. Ground water contamination and dump failure are reasonably to be expected if the mine is built, factors further impacting downstream water quality.

In closing, CCP supports the need to establish an international Biosphere Treaty, a special mechanism to protect the international peace park and manage the international water resources.

Thank you very much for your considerations.

Sincerely,

Sharlon L. Willows

Sharlon L. Willows, Coordinator

ASSOCIATED ORGANIZATION
National Parks & Conservation Association

July 6, 1983

U.S. Senate Sub-Committee on Toxic Waste
Washington, D.C.

Dear Honorable Sirs:

I am very much opposed to the Cabin Creek Proposed Coal Mine to go in 7 miles north of Glacier National Park in British Columbia. As studies from the Flathead River Basin Impact Study show, the mine is a serious threat to the quality of resources downstream in the Flathead Valley. The mine is a serious threat to the air quality and animal travel corridors of Glacier National Park. The quality recreational resources that bring millions of ~~the~~ people to the Flathead Valley cannot withstand a coal mine north of the border.

I join concerned local citizens in working to stop the mine or <u>severely restrict</u> one if it went in. We ask you for your support also. Senator Max Baucus has been instrumental in securing funding for the Flathead River Basin Impact Study. We deeply appreciate his efforts. Findings of the study, as you will learn today, tell the story of a serious risk to Montana if the Cabin Creek Coal Mine proceeds.

Thank you,

Elaine F. Snyder
Box 118
Kila, Mt. 59920

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